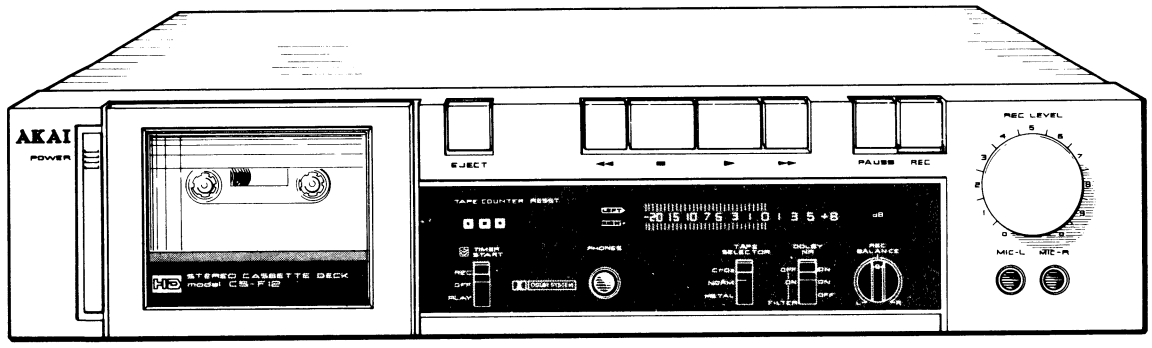
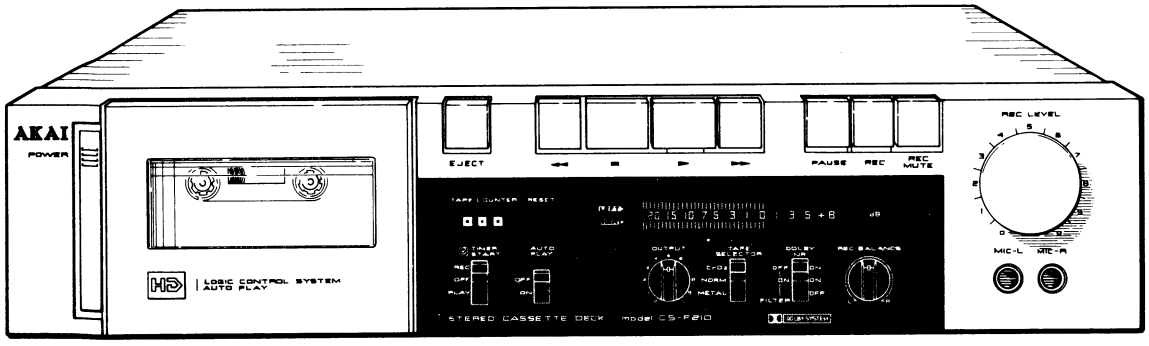
AKAI SERVICE MANUAL



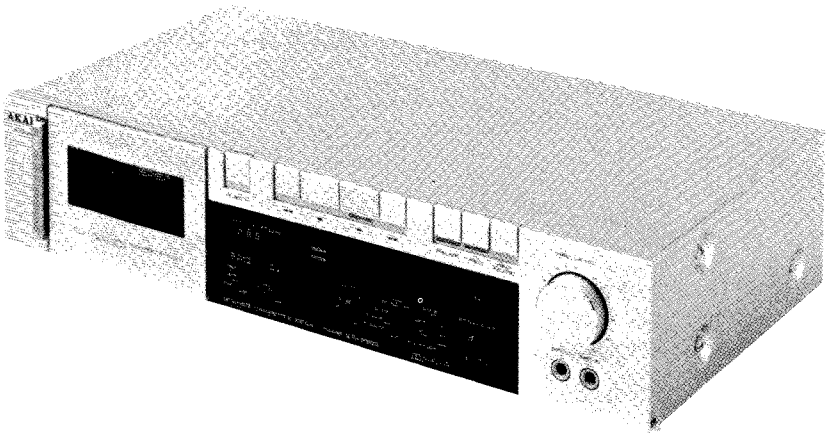


STEREO CASSETTE DECK

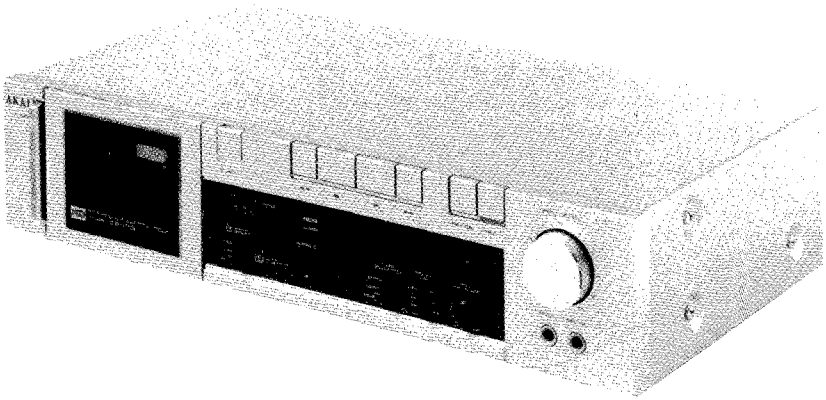
MODEL CS-F110

MODEL CS-F210/J

MODEL CS-F12



CS-F210



CS-F12

STEREO CASSETTE DECK

CS-F110
CS-F210/J
MODEL CS-F12

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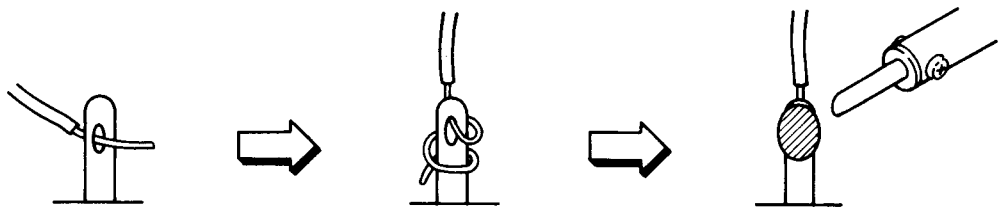
SAFETY INSTRUCTIONS

SAFETY CHECK AFTER SERVICING

Confirm the specified insulation resistance between power cord plug prongs and externally exposed parts of the set is greater than 10 Mohms, but for equipment with external antenna terminals (tuner, receiver, etc.) and is intended for [C] or [A], specified insulation resistance should be more than 2.2 Mohms (ground terminals, microphone jacks, headphone jacks. line-in-out jacks etc.)

PRECAUTIONS DURING SERVICING

1. Parts identified by the ⚠ symbol parts are critical for safety.
   Replace only with parts number specified.
2. In addition to safety, other parts and assemblies are specified for conformance with such regulations as those applying to spurious radiation. These must also be replaced only with specified replacements.
   Examples: RF converters, tuner units, antenna selector switches, RF cables, noise blocking capacitors, noise blocking filters, etc.
3. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads
4. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers (Insulating Barriers)
   4) Insulation sheets for transistors
5. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.), wrap ends of wires securely about the terminals before soldering.



6. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.).
7. Check that replaced wires do not contact sharp edged or pointed parts.
8. Also check areas surrounding repaired locations.
9. Use care that foreign objects (screws, solder droplets, etc.) do not remain inside the set.

SECTION 1

SERVICE MANUAL

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For basic adjustments, measuring methods, and operating principles, refer to GENERAL TECHNICAL MANUAL.

I. SPECIFICATIONS

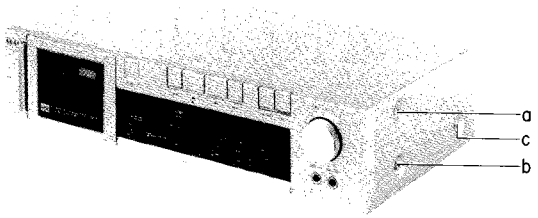
TRACK SYSTEM	4 Track 2 Channel Stereo System
TAPE	Philips Type Cassette
TAPE SPEED	4.76 cm/s ± 1.5% (1-7/8 ips. ± 1.5%)
HEADS	Erase head x 1 High density metallic head for Recording/Playback x 1
MOTOR	Electronically speed controlled DC motor
WOW & FLUTTER	Less than 0.04% WRMS, 0.12% (DIN 45500)
TAPE WINDING TIME	90 sec. using a C-60 cassette tape
FREQUENCY RESPONSE	Normal: 30 to 15,000 Hz ± 3 dB (–20 VU) CrO_2: 30 to 16,000 Hz ± 3 dB (–20 VU) Metal: 30 to 18,000 Hz ± 3 dB (–20 VU)
SIGNAL TO NOISE RATIO	Normal: Better than 56 dB CrO_2: Better than 58 dB Metal: Better than 58 dB (measured via tape with peak recording level) Dolby NR switch ON: Improves up to 10 dB above 5 kHz
HARMONIC DISTORTION	Normal: Less than 0.8% CrO_2: Less than 0.8% Metal: Less than 0.8%
INPUT	MIC: 0.25 mV (input impedance 5.0 kohms) Required microphone impedance: 600 ohms Line: 70 mV (input impedance 47 kohms)
OUTPUT	Line: 410 mV at 0 VU Required load impedance: more than 20 kohms Phone (CS-F12, CS-F210J only): 0.3 mW/8 ohms at 0 VU
DIN (CS-F12 only)	Input: 2 mV (input impedance 10 kohms) Output: 410 mV Required load impedance: more than 20 kohms
POWER REQUIREMENTS	100V, 50/60 Hz for Japan 120V, 60 Hz for USA and Canada 220V, 50 Hz for Europe except UK 240V, 50 Hz for UK and Australia 110V/120V/220V/240V, 50/60 Hz internally switchable for other countries.
DIMENSIONS	440(W) x 103(H) x 233(D) mm (17.3 x 4.1 x 9.2")
WEIGHT	4.0 kg (8.8 lbs)
POWER CONSUMPTION	U/T, JPN: 13W CSA, AAL: 15W

* For improvement purposes, specifications and design are subject to change without notice.
* "Dolby" and the Double D symbol are trademarks of Dolby Laboratories.
(Manufactured under license from Dolby Laboratories).

II. DISMANTLING OF UNIT

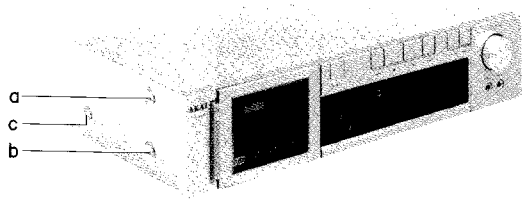
In case of trouble, etc. necessitating dismantling, please dismantle in the order shown in the photographs. Reassemble in reverse order.

1



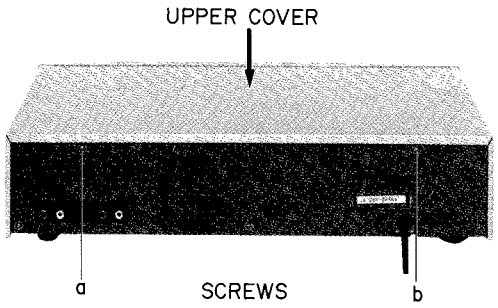
SCREWS

2

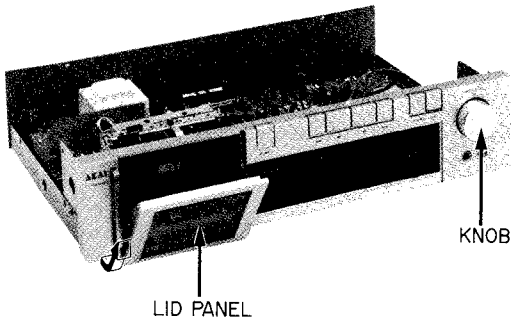


SCREWS

3



4



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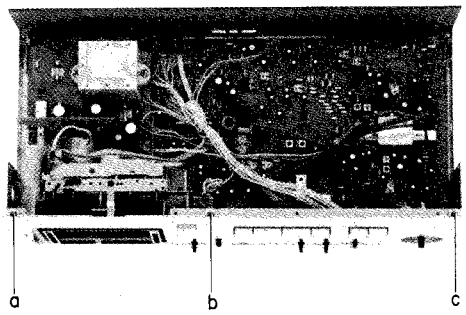
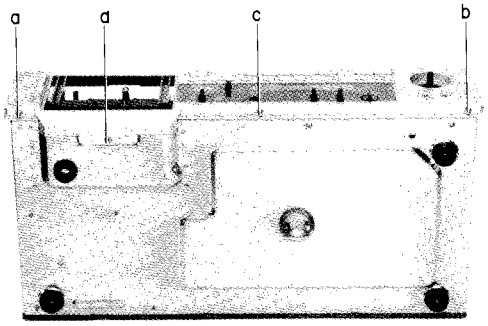


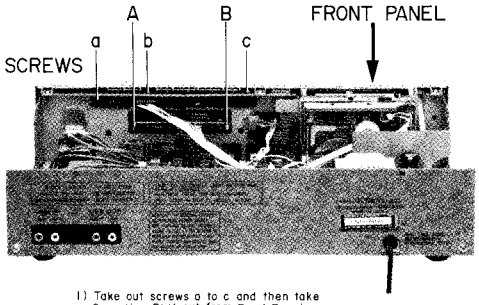
SCREWS

6



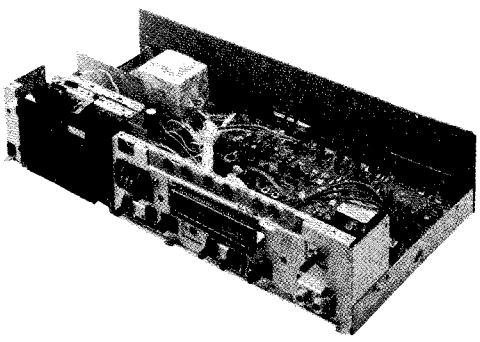
SCREWS

7



1) Take out screws a to c and then take Operation BLK out from Front Panel.
2) Extencled the tab of Front Panel and then take Bar Meter BLK out from Front Panel.

8



III. CONTROLS

1. Model CS-F110, CS-F12

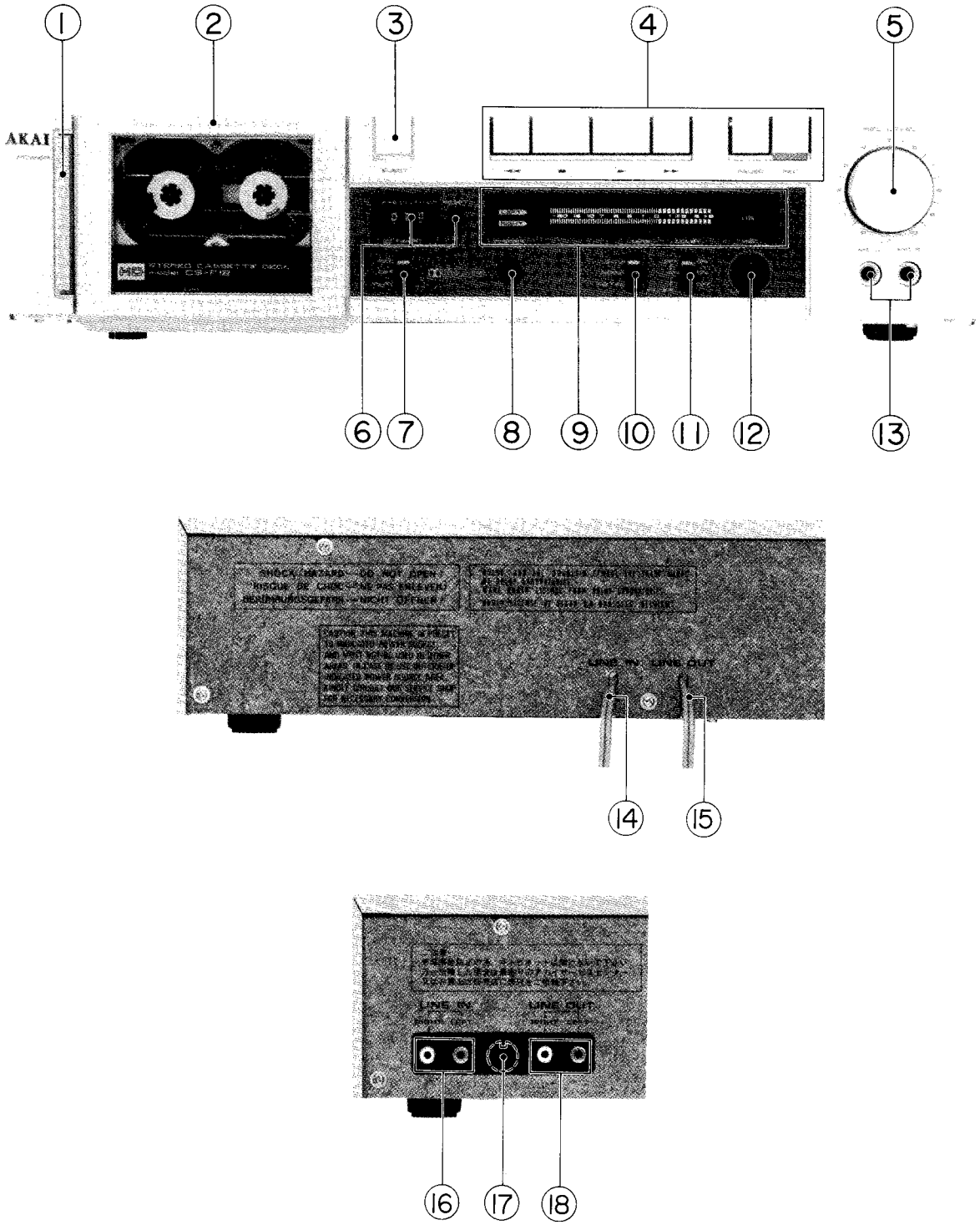


Fig. 1 Controls (CS-F110, CS-F12)

1. POWER SWITCH
2. CASSETTE RECEPTACLE
3. EJECT BUTTON
4. OPERATION BUTTONS
5. RECORDING LEVEL CONTROL (REC LEVEL)
6. TAPE COUNTER and RESET BUTTON
7. TIMER SET SWITCH
8. HEADPHONE JACK (PHONES) (CS-F12 only)
9. FLD BAR METER
10. TAPE SELECTOR
11. DOLBY NR and FILTER SWITCH
12. RECORDING (REC) BALANCE CONTROL
13. MICROPHONE JACKS
14. LINE IN PIN-PLUG CORD (CS-F110)
15. LINE OUT PIN-PLUG CORD (CS-F110)
16. LINE IN JACKS (RIGHT and LEFT) (CS-F12)
17. DIN JACK (Some models do not have this facility.) (CS-F12)
18. LINE OUT JACKS (RIGHT and LEFT) (CS-F12)

2. Model CS-F210/J

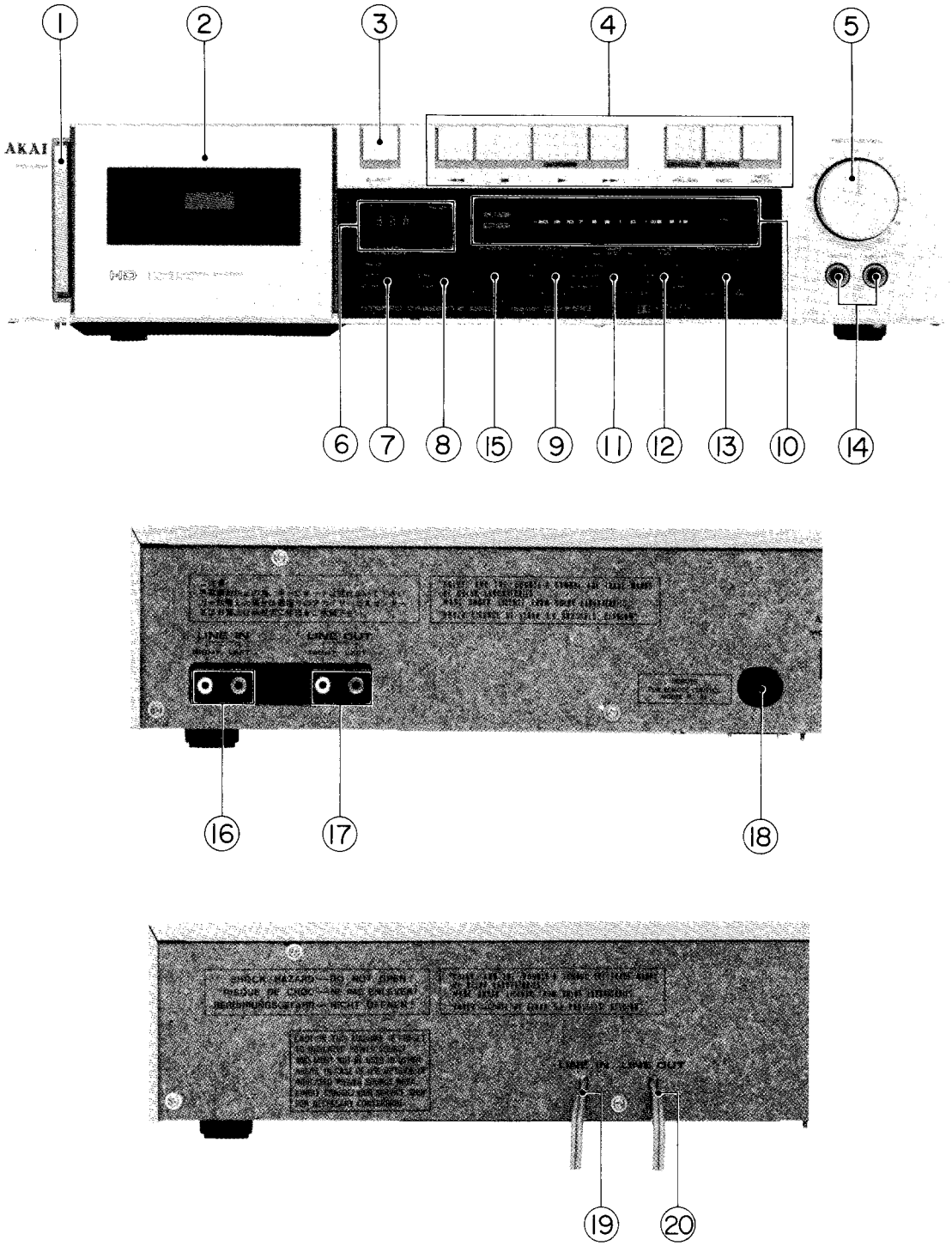


Fig. 2 Controls (CS-F210/J)

1. POWER SWITCH
2. CASSETTE RECEPTACLE
3. EJECT BUTTONS
4. OPERATION BUTTONS
5. RECORDING LEVEL CONTROL (REC LEVEL)
6. TAPE COUNTER and RESET BUTTON
7. TIMER START SWITCH
8. AUTO PLAY SWITCH
9. OUTPUT CONTROL
10. FLD BAR METER
11. TAPE SELECTOR SWITCH
12. DOLBY NR and FILTER SWITCH
13. RECORDING (REC) BALANCE CONTROL
14. MICROPHONE JACKS
15. HEADPHONE JACK (PHONES) (CS-F210J)
16. LINE IN JACKS (RIGHT and LEFT) (CS-F210J)
17. LINE OUT JACKS (RIGHT and LEFT) (CS-F210J)
18. REMOTE CONTROL JACK (CS-F210J)
19. LINE IN PIN-PLUG CORD (CS-F210)
20. LINE OUT PIN-PLUG CORD (CS-F210)

IV. PRINCIPAL PARTS LOCATION

1. Model CS-F110, CS-F12

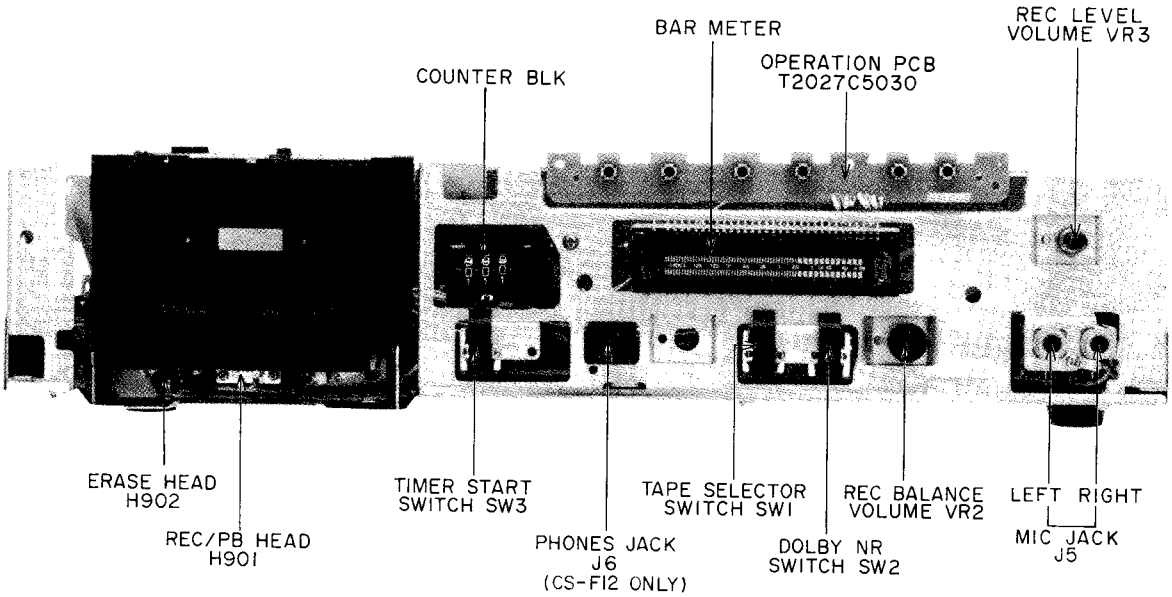


Fig. 3 Front View

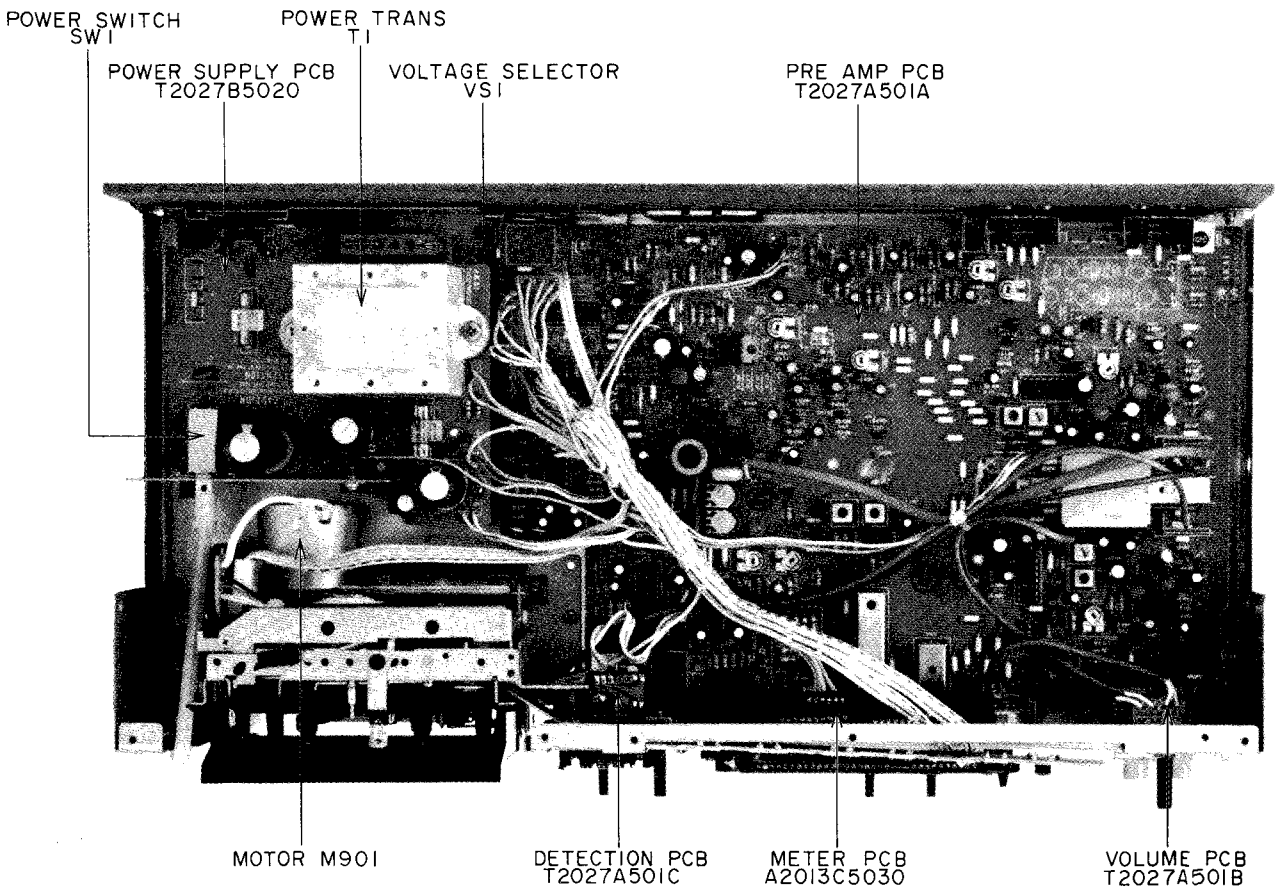


Fig. 4 Top View

2. Model CS-F210/J

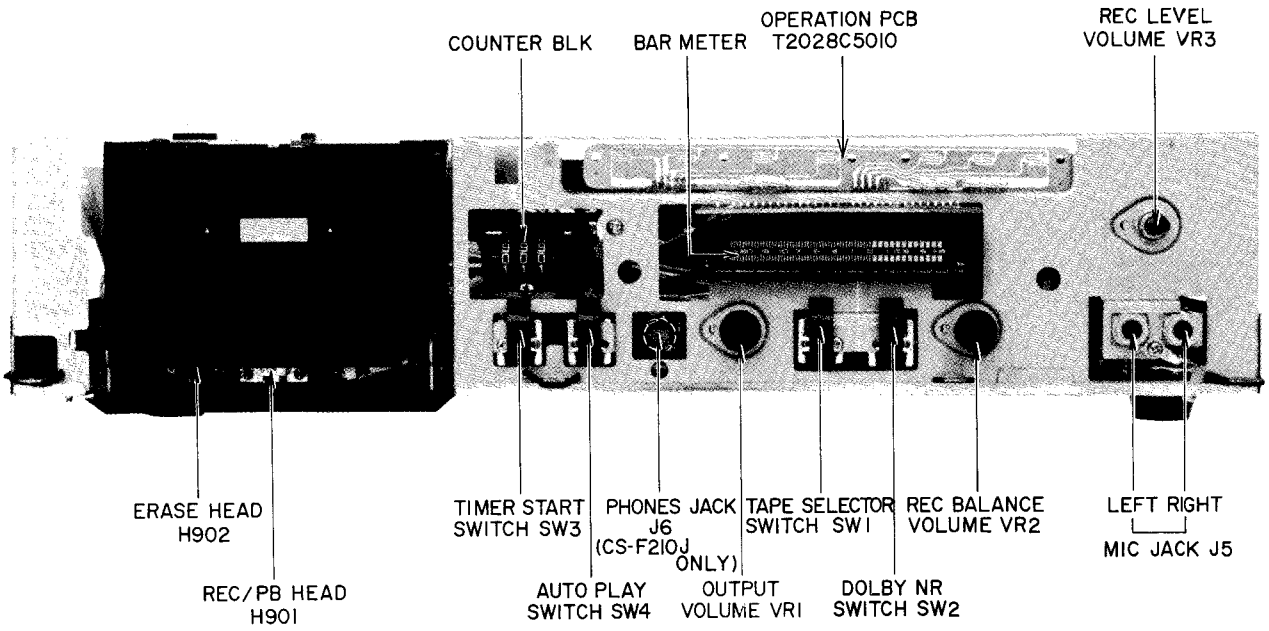


Fig. 5 Front View

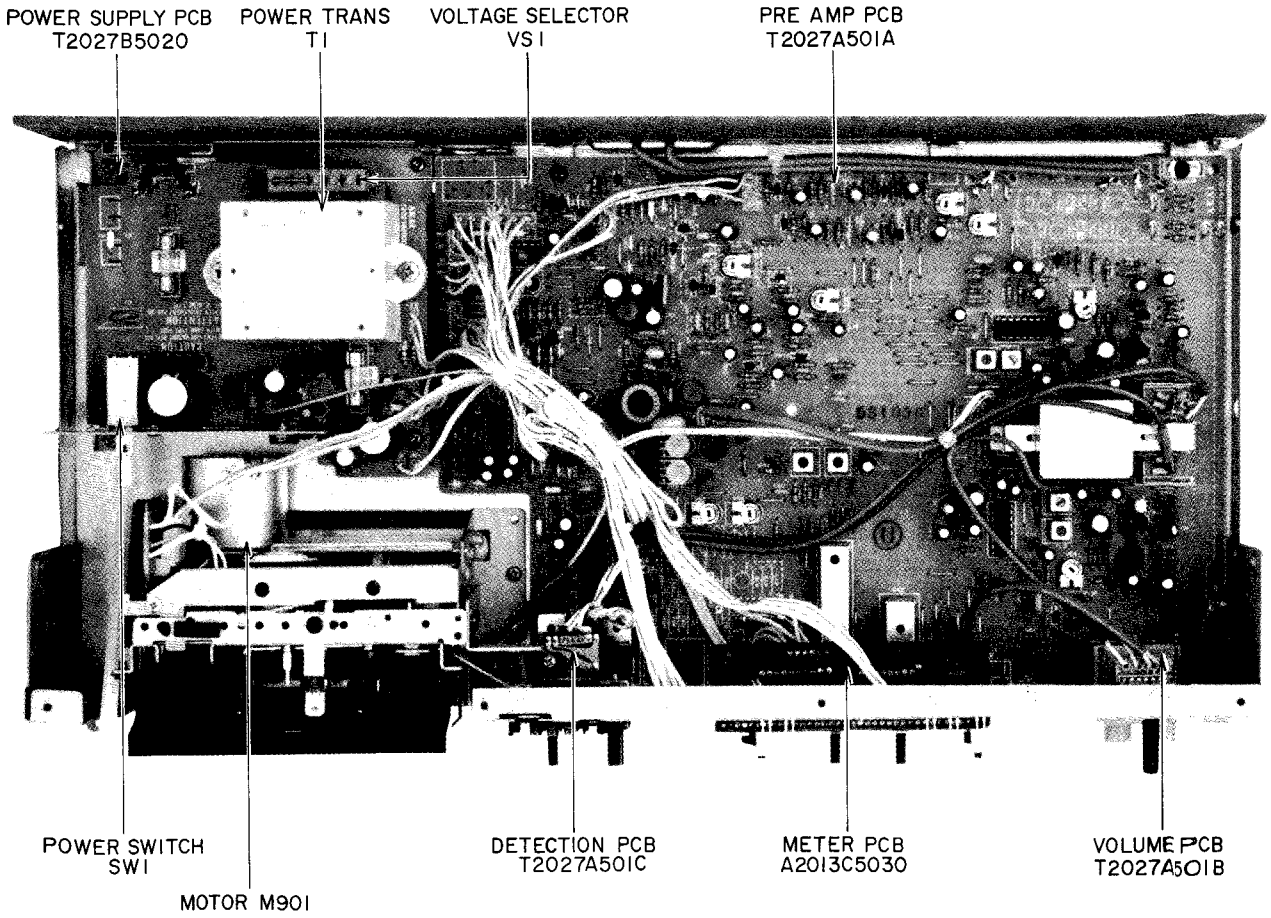


Fig. 6 Top View

V. VOLTAGE AND CYCLE CONVERSION

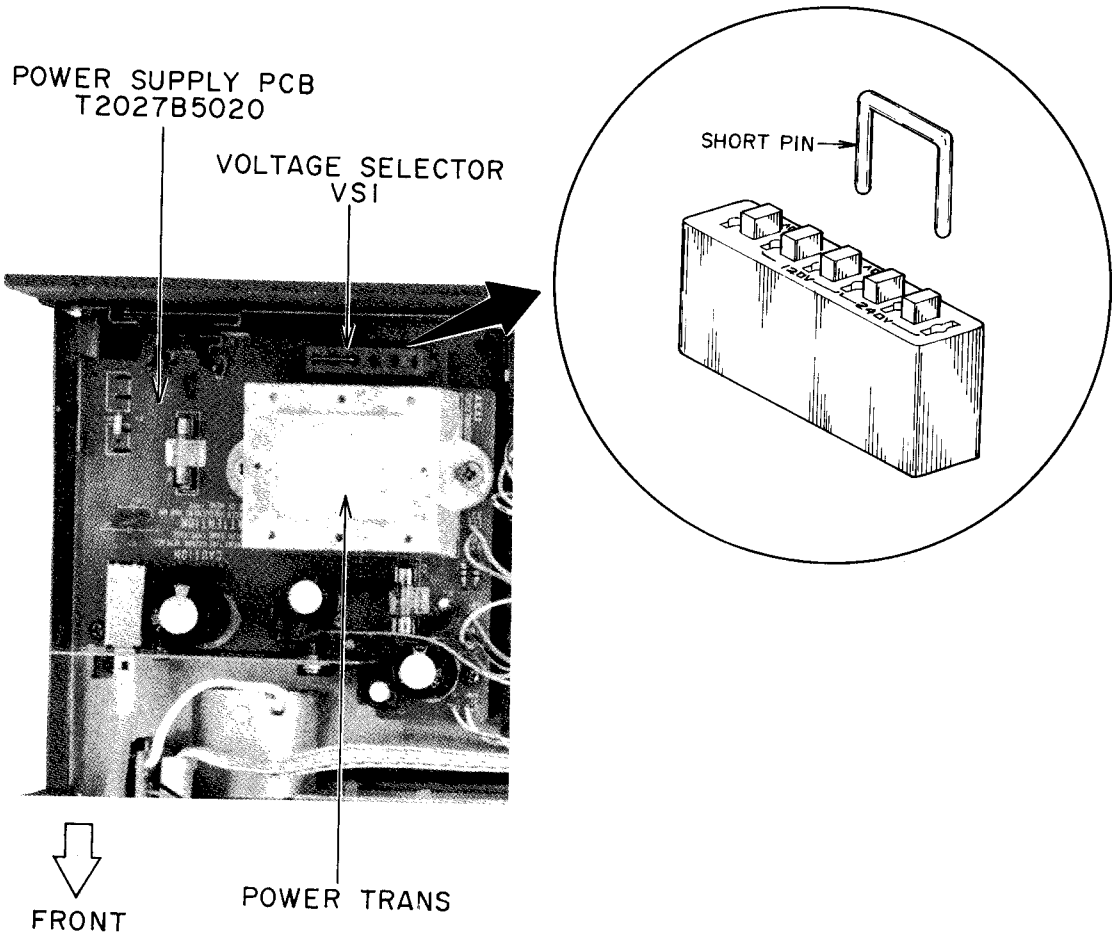


Fig. 7 Voltage Conversion (U/T Model only)

1. VOLTAGE CONVERSION

Models for Canada, Europe, USA, Japan UK and Australia are not equipped with this facility.

Each machine is preset at the factory according to destination, but some machines can be set to 110V, 120V, 220V or 240V as required.

If voltage change is necessary, this can be accomplished as follows:

1) Disconnect power cord.
2) Loosen holding screws and remove upper cover.
3) Remove short pin plug from present holes and replace in correct holes. Follow the markings explicitly.

2. CYCLE CONVERSION

With DC motor, cycle conversion is not necessary.

VI. MECHANICAL AND HEAD ADJUSTMENT

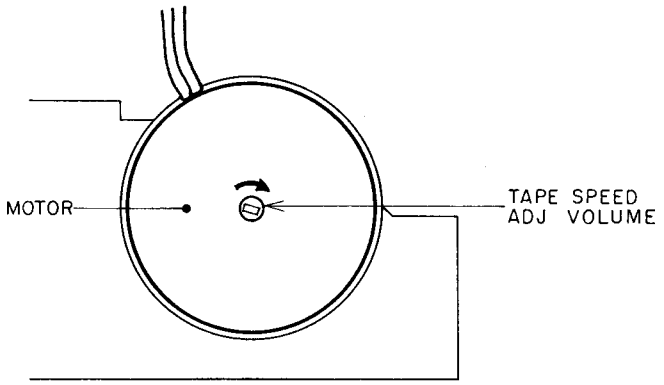


Fig. 8 Tape Speed Adjustment

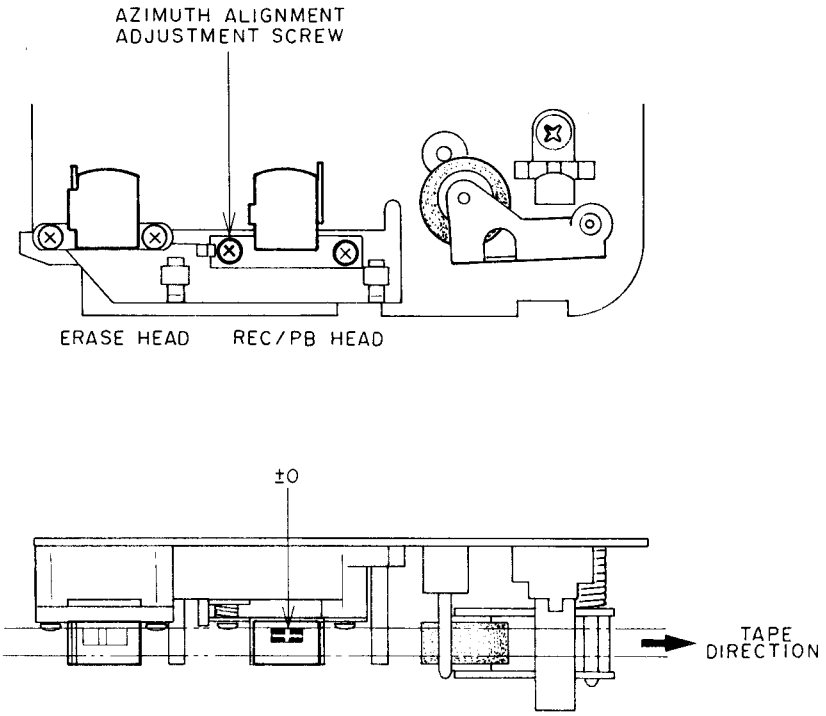


Fig. 9 Head Adjustment

1. VARIOUS TORQUE MEASUREMENT

Use the Cassette Torque Meter (TF-110CT) to confirm that the value of each mode is as follows:

Take up Torque : 35 to 70 g-cm
FF/RWD Torque : 70 to 150 g-cm

2. TAPE SPEED ADJUSTMENT

(Refer to Fig. 8)

Playback a 1,000 Hz pre-recorded test tape (TF-102CS) and adjust the tape speed adjustment volume to obtain a tape speed of 1,000 Hz ± 5 Hz.

3. RECORDING/PLAYBACK HEAD AZIMUTH ALIGHMENT (Refer to Fig. 9)

a) Playback a 10 kHz pre-recorded cassette azimuth alignment test tape (TF-106CH) and adjust screw shown in Fig. 9 to obtain maximum output on both channels.

b) Invert cassette and confirm that the output level does not change form that obtained in Item 3-a) above.

If the output level differs, adjust in the same way as in Item 3-a) above until both sides of the test tape display equal output.

NOTES:
1. Be sure to clean the heads prior to head adjustment.
2. Be careful not to use a magnetized driver or other magnetized tools in the vicinity of the heads.
3. Be sure to demagnetize the heads with a Head Demagnetizer before and after head adjustment.

VII. AMPLIFIER ADJUSTMENT

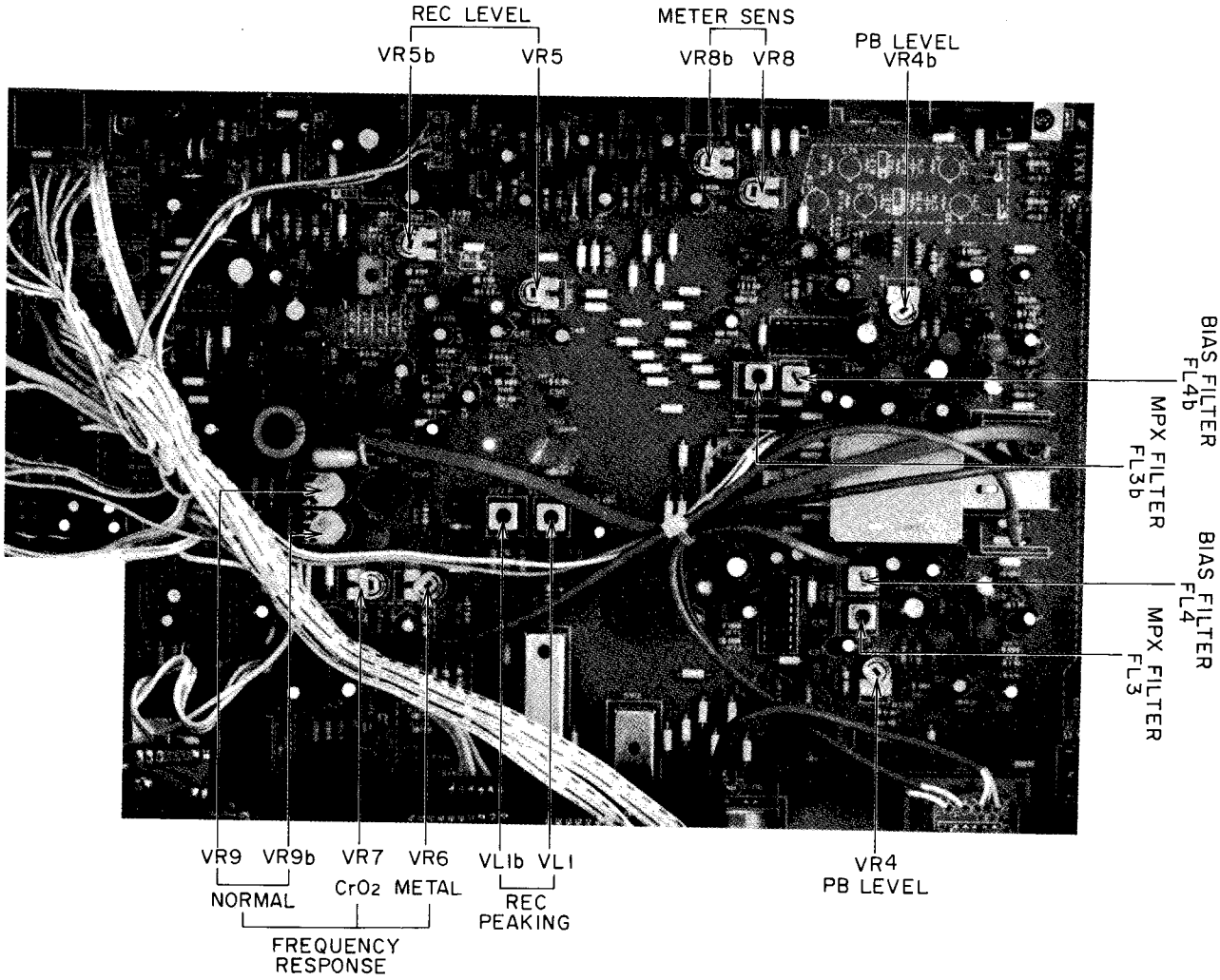


Fig. 10 Pre Amp P.C Board (Parts Side View)

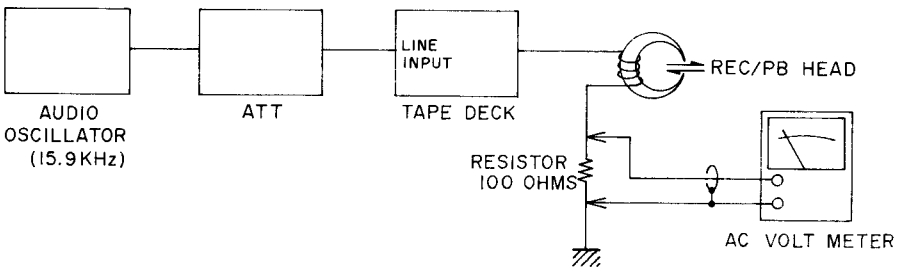
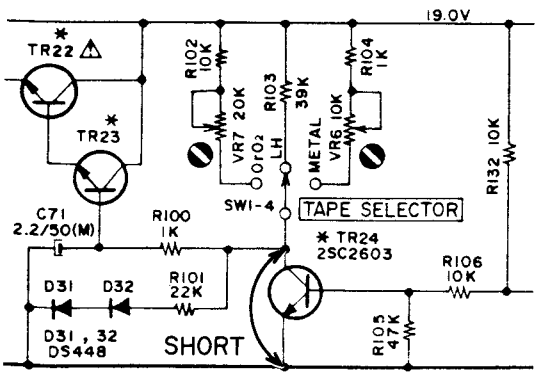
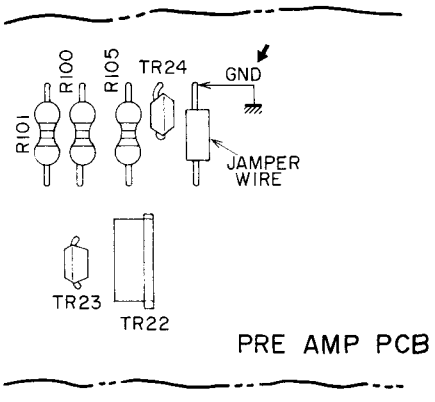


Fig. 11 Instruments Connection



(a)



(b)

Fig. 12 How to stop REC Bias Oscillation

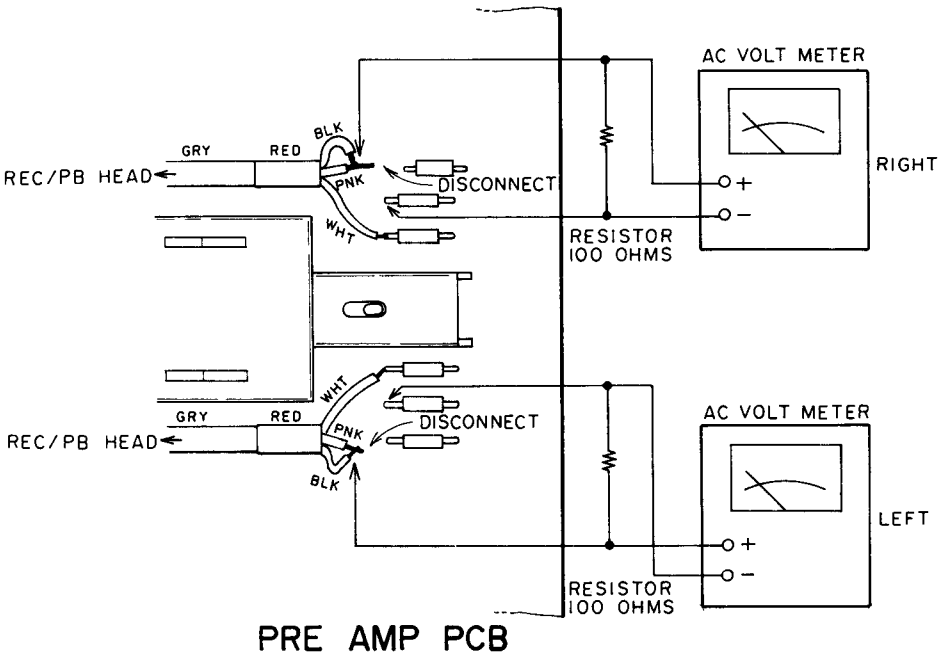


Fig. 13 REC Peaking Adjustment

Step	Adjustment Item	Test Tape Supply Signal	Mode	Adjustment Parts	Result	Remarks
1	PB Level	333 Hz (TF-101CL)	PB	VR4	−5.5 ± 0.5 dBm (410 mV)	Set Tape Selector Switch to NORMAL.
2	REC Peaking	15.9 kHz from oscillator	REC	VL1	Maximum AC Voltmeter indication	Refer to NOTE 3, 4 and Figs. 12, 13.
3	Normal Position Frequency Response	Normal Blank Tape 1 kHz, 10 kHz −25.5 dBm	REC/PB	VR9	1 kHz to 10 kHz flat response	
4	CrO_2 Position Frequency Response	CrO_2 Blank Tape 1 kHz, 10 kHz −25.5 dBm	REC/PB	VR7	1 kHz to 10 kHz flat response	Set Tape Selector Switch to CrO_2.
5	Metal Position Frequency Response	Metal Blank Tape 1 kHz, 10 kHz −25.5 dBm	REC/PB	VR6	1 kHz to 10 kHz flat response	Set Tape Selector Switch to METAL.
6	REC Level	Normal Blank Tape 1 kHz, −5.5 dBm	REC/PB	VR5	−5.5 ± 0.5 dBm (410 mV)	Set Tape Selector Switch to NORMAL.
7	MPX Filter	19 kHz from oscillator	REC	FL3	Minimum Output	Set MPX Filter Switch to ON.
8	Bias Filter	No Signal Input	REC	FL4	Minimum Output	Set Tape Selector Switch to METAL. Set REC Volume to maximum.
9	Meter Sensitivity	1 kHz, −5.5 dBm from oscillator	REC	VR8	0 dB Indication	

NOTES: 1. Except for Step 7 set Dolby NR Switch to OFF Position.
2. Use the following cassette measuring tapes:
Normal Tape : Maxell UD C-60
CrO_2 Tape : TDK SA C-60
Metal Tape : TDK MA-C C-60
3. Stop the recording bias oscillator while making record peaking adjustment.
4. Unless the core is moved unintentionally this adjustment is not necessary.

VIII. DC RESISTANCE OF VARIOUS COILS

Description	DC Resistance
REC/PB Head	210 ohms ± 20%
Erase Head	3.5 ohms
Plunger Solenoid (FF, REW, PLAY)	75 ohms ± 10%

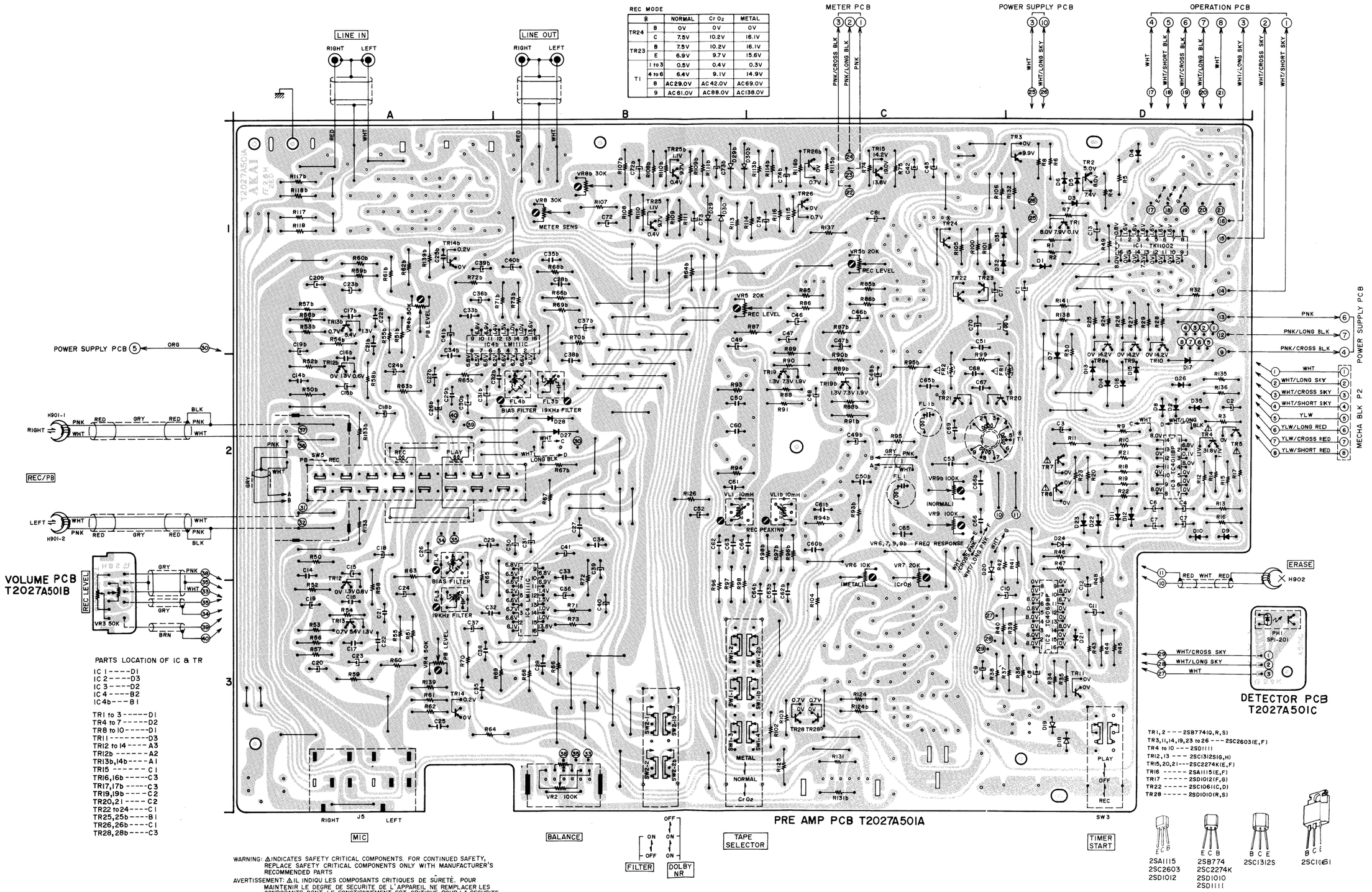
IX. CLASSIFICATION OF VARIOUS P.C BOARDS

1. P.C BOARD TITLES AND IDENTIFICATION NUMBER

P.C Board Title	P.C Board Number
Pre Amp P.C Board	T2027A501A
Volume P.C Board	T2027A501B
Detector P.C Board	T2027A501C
Power Supply P.C Board	T2027B5020
Operation P.C Board (CS-F110, CS-F12)	T2027C5030
Operation P.C Board (CS-F210/J)	T2028C5010
Meter P.C Board	A2013C5030

2. COMPOSITION OF VARIOUS P.C BOARDS

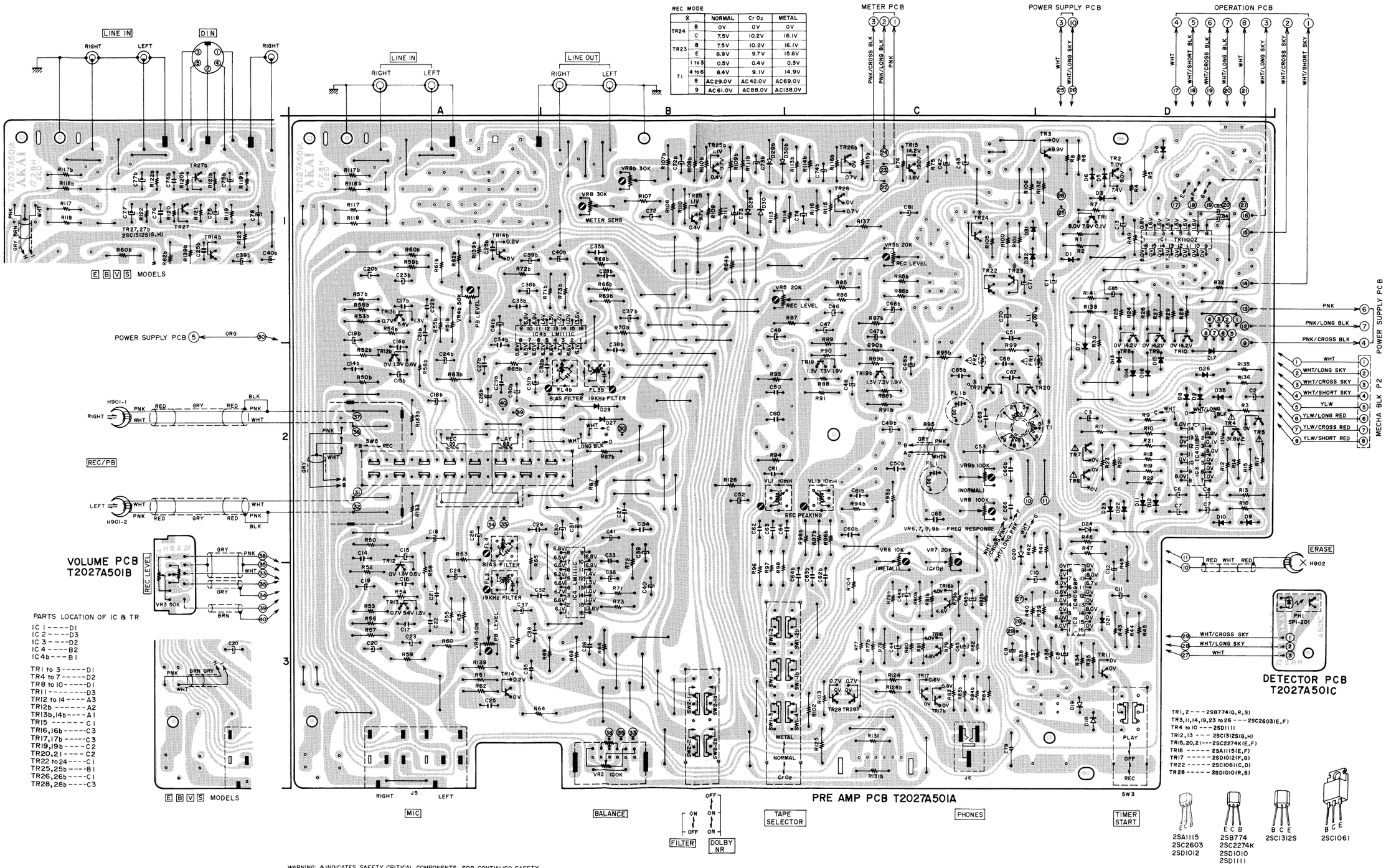
1) PRE AMP P.C BOARD T2027A501A (2ED), VOLUME P.C BOARD T2027A501B and DETECTOR P.C BOARD T2027A501C (Model CS-F110)



WARNING: ⚠INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

AVERTISSEMENT: ⚠IL INDIQU LES COMPOSANTS CRITIQUES DE SÛRETÉ. POUR MAINTENIR LE DEGRE DE SECURITE DE L'APPAREIL NE REMPLACER LES CONPOSANTS DONT LE FONCTIONNEMENT EST CRITIQUE POUR LA SECURITE QUE PAR DES PIECES RECOMMANDEES PAR LE FABRICANT

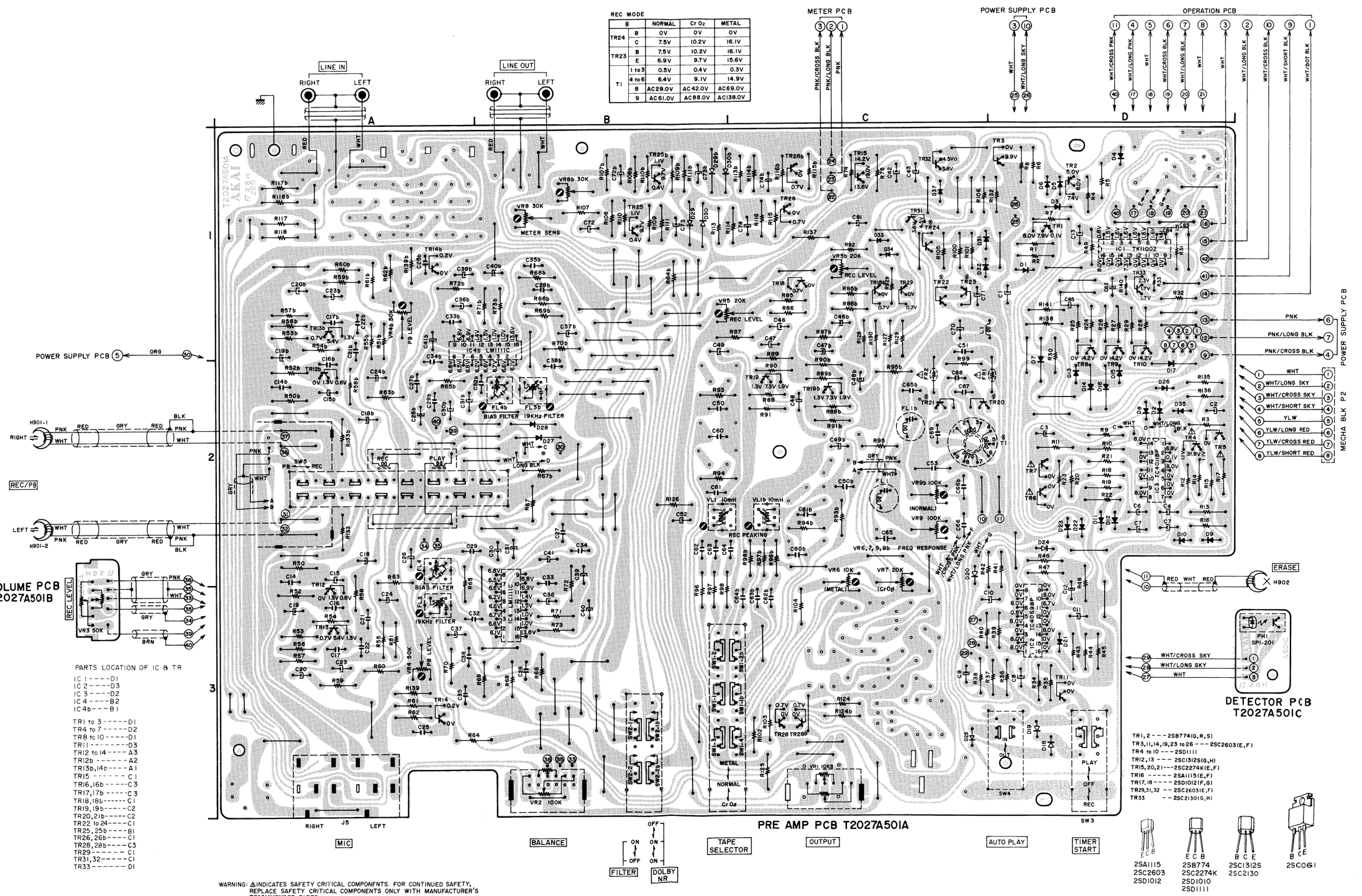
2) PRE AMP P.C BOARD T2027A501A (2ED), VOLUME P.C BOARD T2027A501B and DETECTOR P.C BOARD T2027A501C (Model CS-F12)



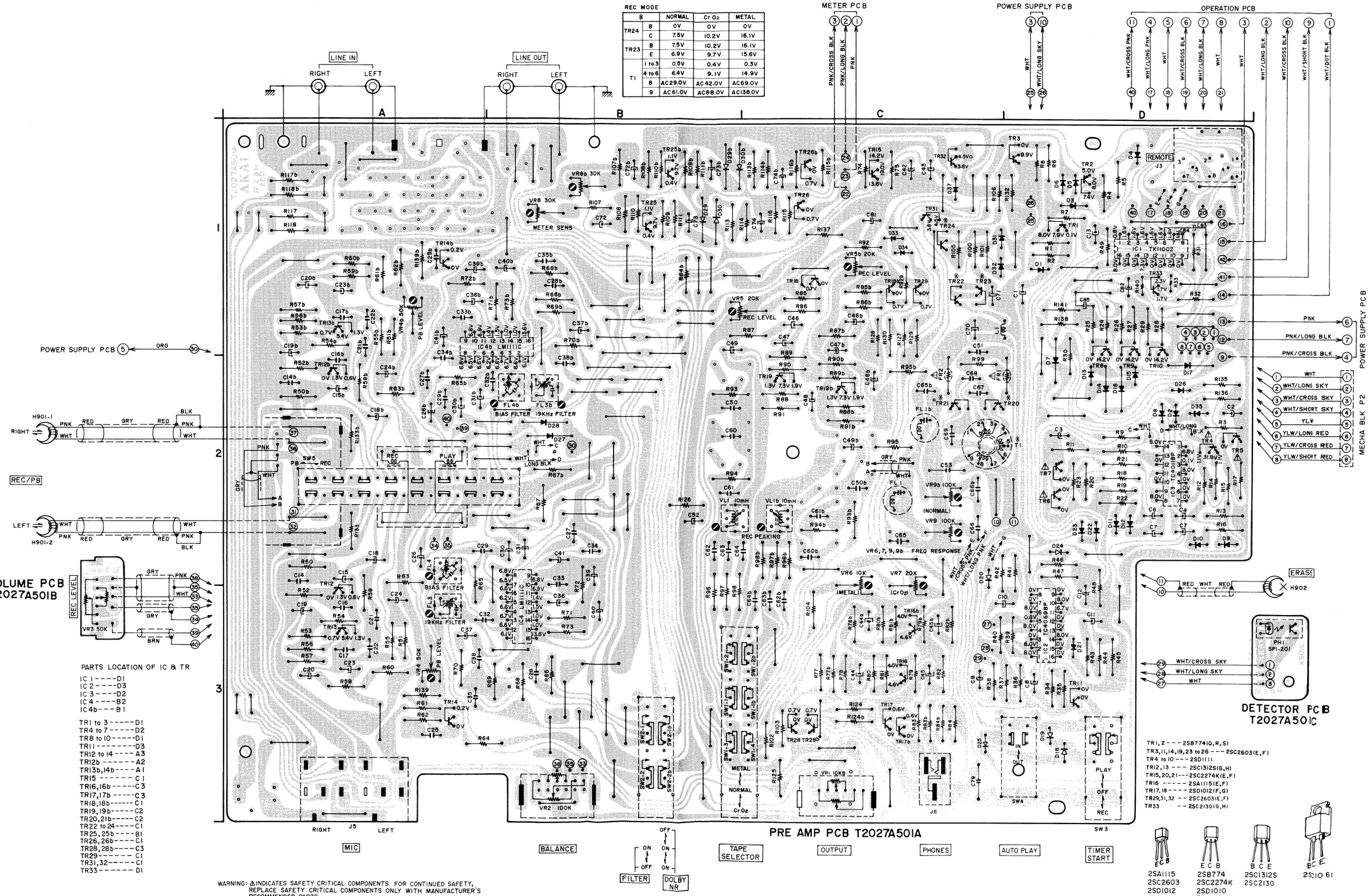
WARNING: ⚠INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

AVERTISSEMENT: ⚠IL INDIQU LES COMPOSANTS CRITIQUES DE SÛRETÉ. POUR MAINTENIR LE DEGRE DE SECURITE DE L'APPAREIL NE REMPLACER LES CONPOSANTS DONT LE FONCTIONNEMENT EST CRITIQUE POUR LA SECURITE QUE PAR DES PIECES RECOMMANDEES PAR LE FABRICANT

3) PRE AMP P.C BOARD T2027A501A (2ED), VOLUME P.C BOARD T2027A501B and DETECTOR P.C BOARD T2027A501C (Model CS-F210)



4) PRE AMP P.C BOARD T2027A501A (2ED), VOLUME P.C BOARD T2027A501B and DETECTOR P.C BOARD T2027A501C (Model CS-F210J)

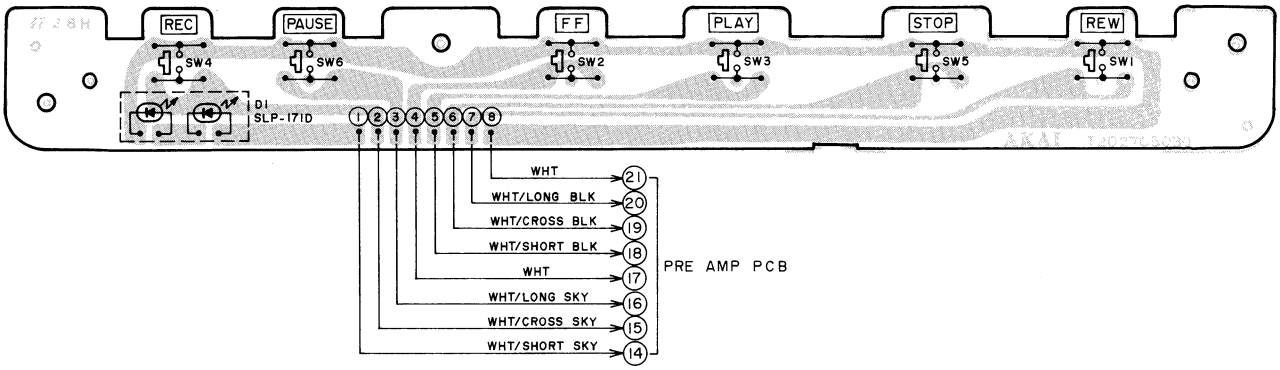


REC MODE		NORMAL	Cr O2	METAL
TR24	B	0V	0V	0V
	C	7.5V	10.2V	16.1V
TR23	B	7.5V	10.2V	16.1V
	E	6.9V	9.7V	15.6V
T1	1 to 3	0.5V	0.4V	0.3V
	4 to 6	6.4V	9.1V	14.9V
	8	AC29.0V	AC42.0V	AC69.0V
	9	AC61.0V	AC88.0V	AC138.0V

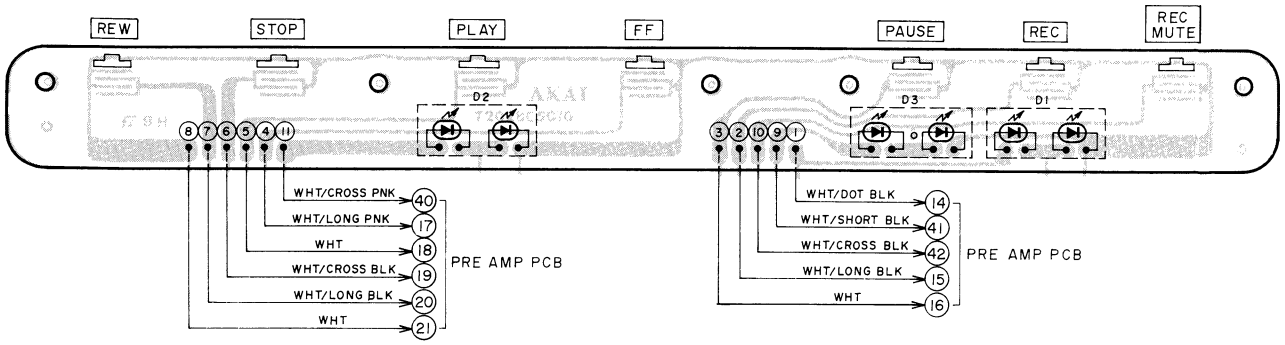
WARNING: ⚠INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

AVERTISSEMENT: ⚠IL INDIQU LES COMPOSANTS CRITIQUES DE SÛRETÉ. POUR MAINTENIR LE DEGRE DE SECURITE DE L'APPAREIL NE REMPLACER LES CONPOSANTS DONT LE FONCTIONNEMENT EST CRITIQUE POUR LA SECURITE QUE PAR DES PIECES RECOMMANDEES PAR LE FABRICANT

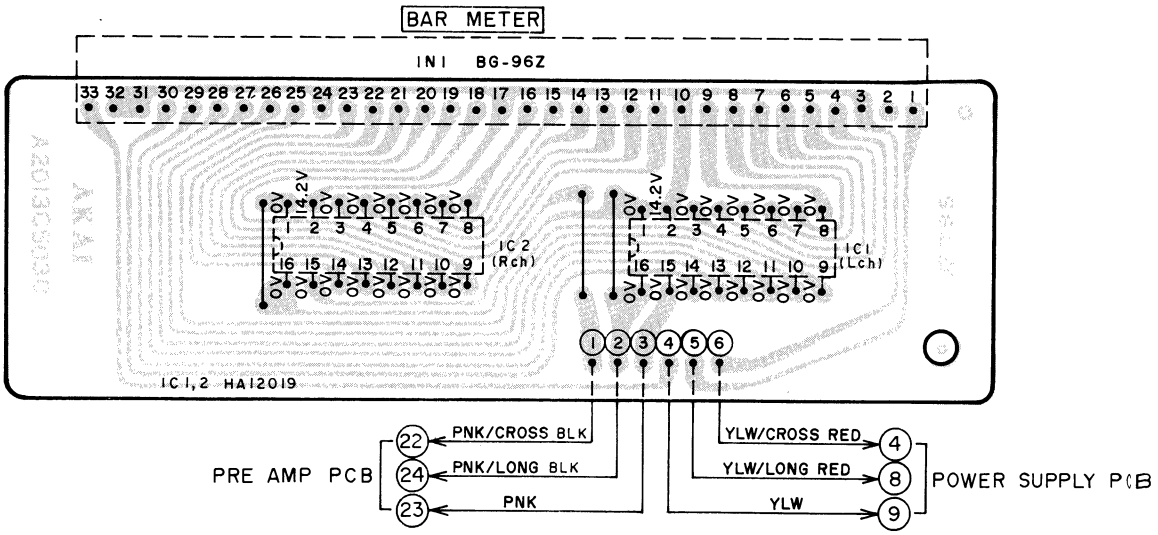
5) OPERATION P.C BOARD T2027C5030 (Model CS-F110, CS-F12)



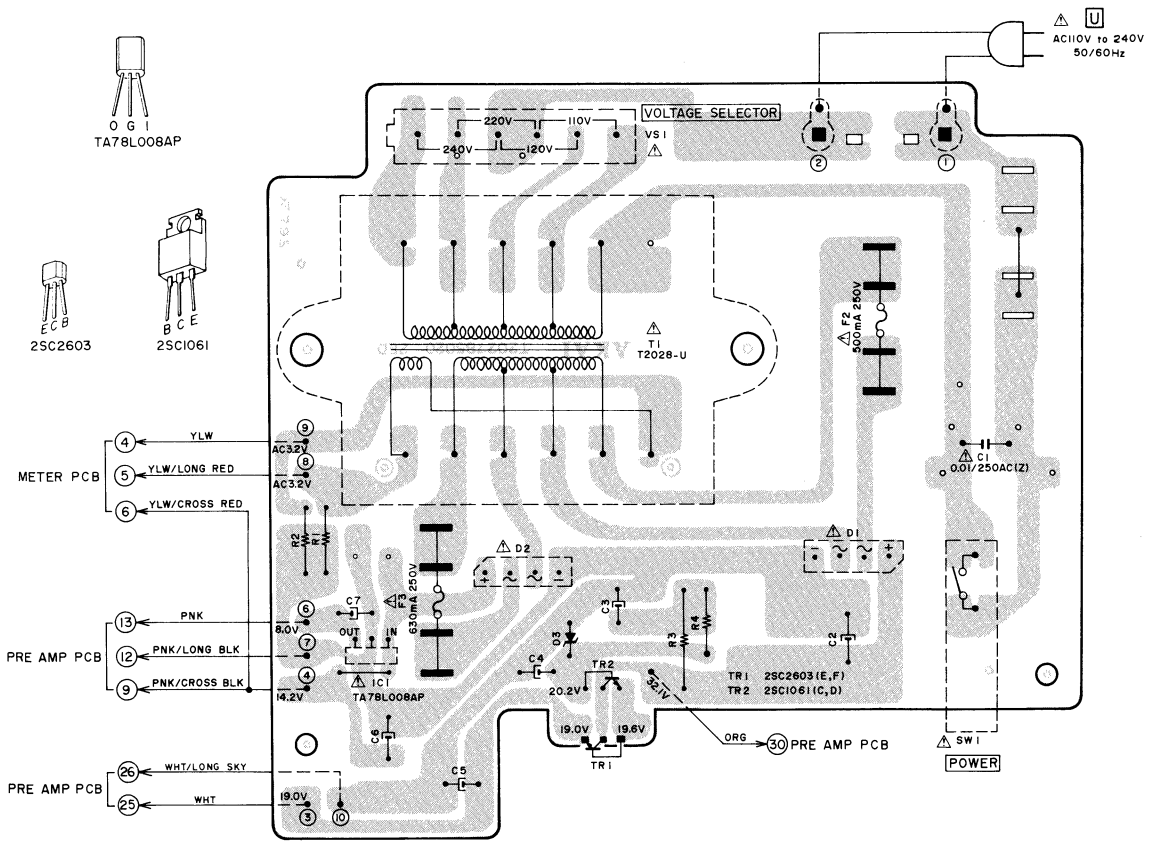
6) OPERATION P.C BOARD T2028C5010 (Model CS-F210/J)



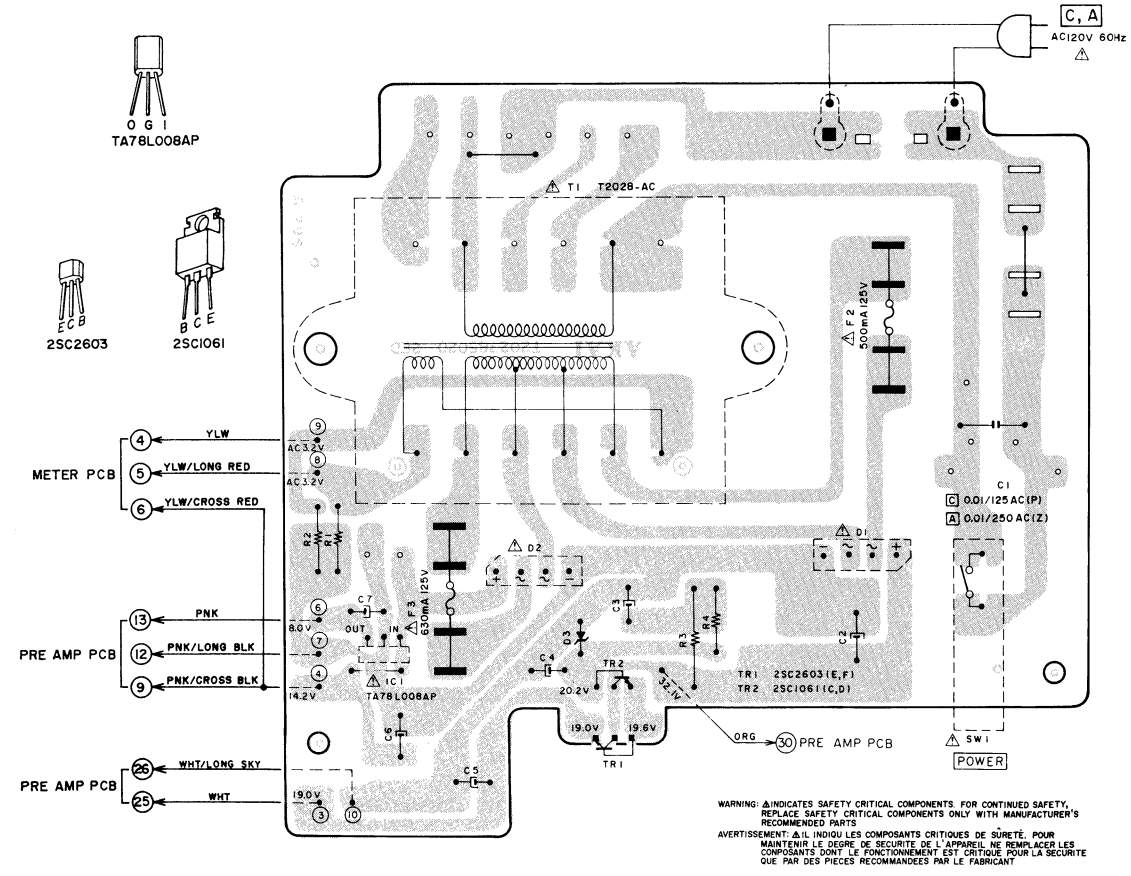
7) METER P.C BOARD A2013C5030 (All Models)



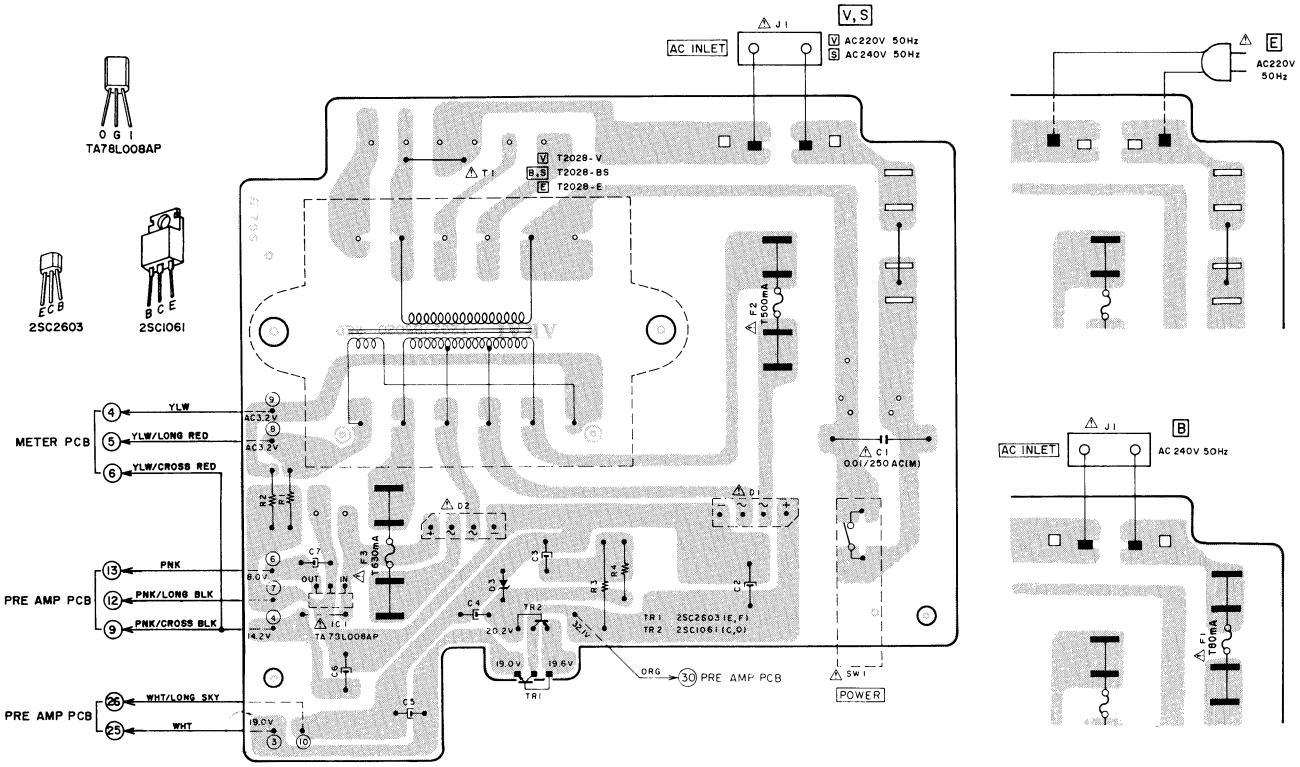
8) POWER SUPPLY P.C BOARD T2027B5020 (2ED) (U/T) (Model CS-F110, CS-F12, CS-F210)



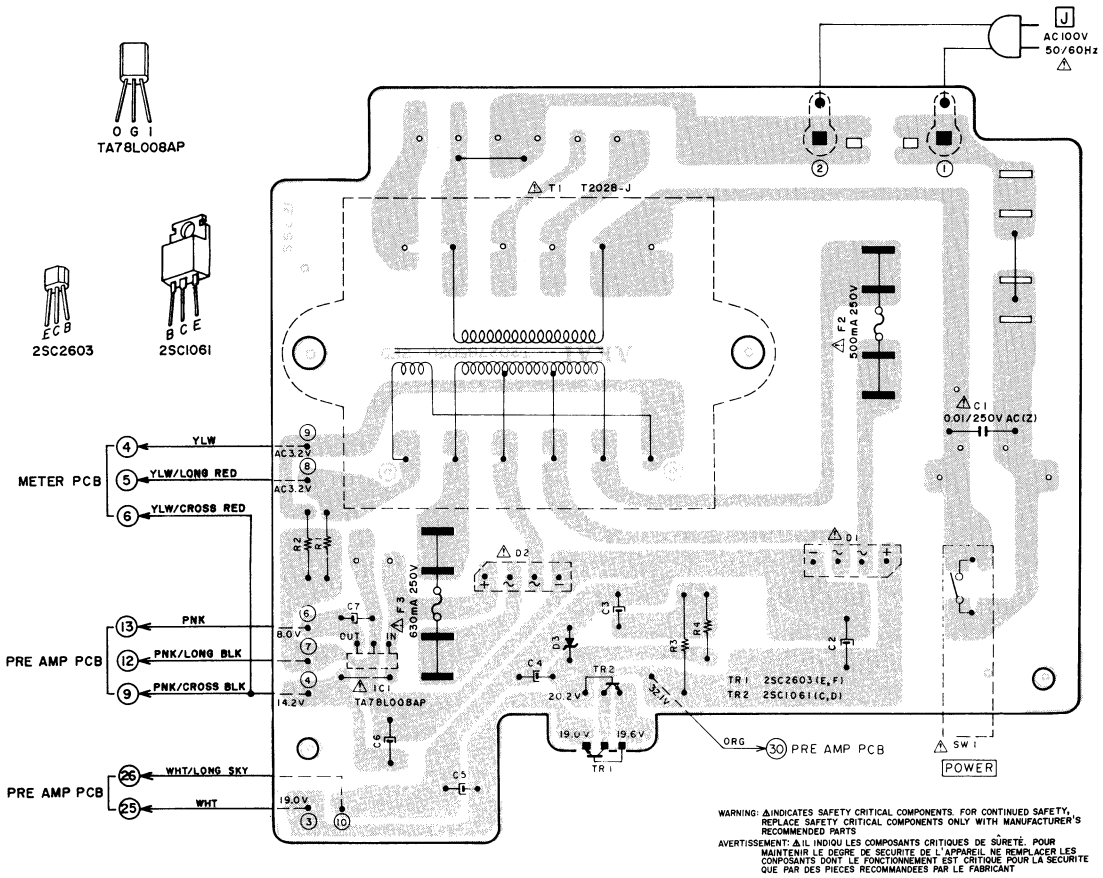
9) POWER SUPPLY P.C BOARD T2027B5020 (2ED) (CSA, AAL) (Model CS-F110, CS-F12, CS-F210)



10) POWER SUPPLY P.C BOARD T2027B5020 (2ED) (CEE, VDE, UK, SAA) (Model CS-F110, CS-F12, CS-F210)



11) POWER SUPPLY P.C BOARD T2027B5020 (2ED) (Model CS-F210J)



SECTION 2

PARTS LIST

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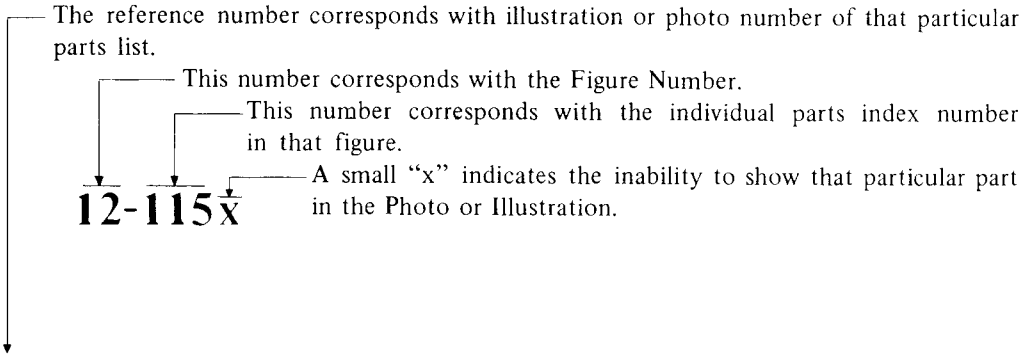
Resistor and Capacitor which is not listed in this parts list, please refer to COMMON LIST FOR SERVICE PARTS.

HOW TO USE THIS PARTS LIST

1. This parts list is compiled by various individual blocks based on assembly process.
2. When ordering parts, please describe parts number, serial number, and model number in detail.
3. How to read List


The reference number corresponds with illustration or photo number of that particular parts list.
This number corresponds with the Figure Number.
This number corresponds with the individual parts index number in that figure.
A small "x" indicates the inability to show that particular part in the Photo or Illustration.
12-115x

Ref. No.	Parts No.	Description
		FLYWHEEL BLOCK #13
12-115x	800425	Flywheel Block Assy. Comp.
12-116	244506	Flywheel Only
12-117x	244754	Felt, Flywheel
12-118	251324	Main Metal Case
12-119	253080	Main Metal

4. The symbol numbers shown on the P.C. Board list can be matched with the Composite Views of Components of the Schematic Diagram or Service Manual.
5. Please utilize separate "Common List for Service Parts" for Resistor Parts orders.
6. The shape of the parts and parts name, etc. can be confirmed by comparing them with the parts shown on the Electrical Parts Table of P.C. Board.
7. Both the kind of part and installation position can be determined by the Parts Number. To determine where a parts number is listed, utilize Parts Index at end of Parts List.
   It is necessary first of all to find the Parts Number. This can be accomplished by using the Reference Number listed at right of parts number in the Parts Index. (meaning of ref. no. outlined in Item 3 above).
8. Utilize separate "Price List for Parts" to determine unit price. The most simple method of finding parts Price is to utilize the reference number.

CAUTION:
1. When placing an order for parts, be sure to list the parts no. model no., and description. There are instances in which if any of this information is omitted, parts cannot be shipped or the wrong parts will be delivered.
2. Please be careful not to make a mistake in the parts no. If the parts no. isin error, a part different from the one ordered may be delivered.
3. Because parts number and parts unit supply in the Preliminary Service Manual (Basic Parts List) may be partially changed, please use this parts list for all future reference.

WARNING: ⚠ INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.

AVERTISSEMENT: ⚠ IL INDIQU LES COMPOSANTS CRITIQUES DE SURETE. POUR MAINTENIR LE DEGRE DE SECURITE DE L'APPAREIL NE REMPLACER LES COMPOSANTS DONT LE FONCTIONNEMENT EST CRITIQUE POUR LA SECURITE QUE PAR DES PIECES RECOMMANDEES PAR LE FABRICANT.

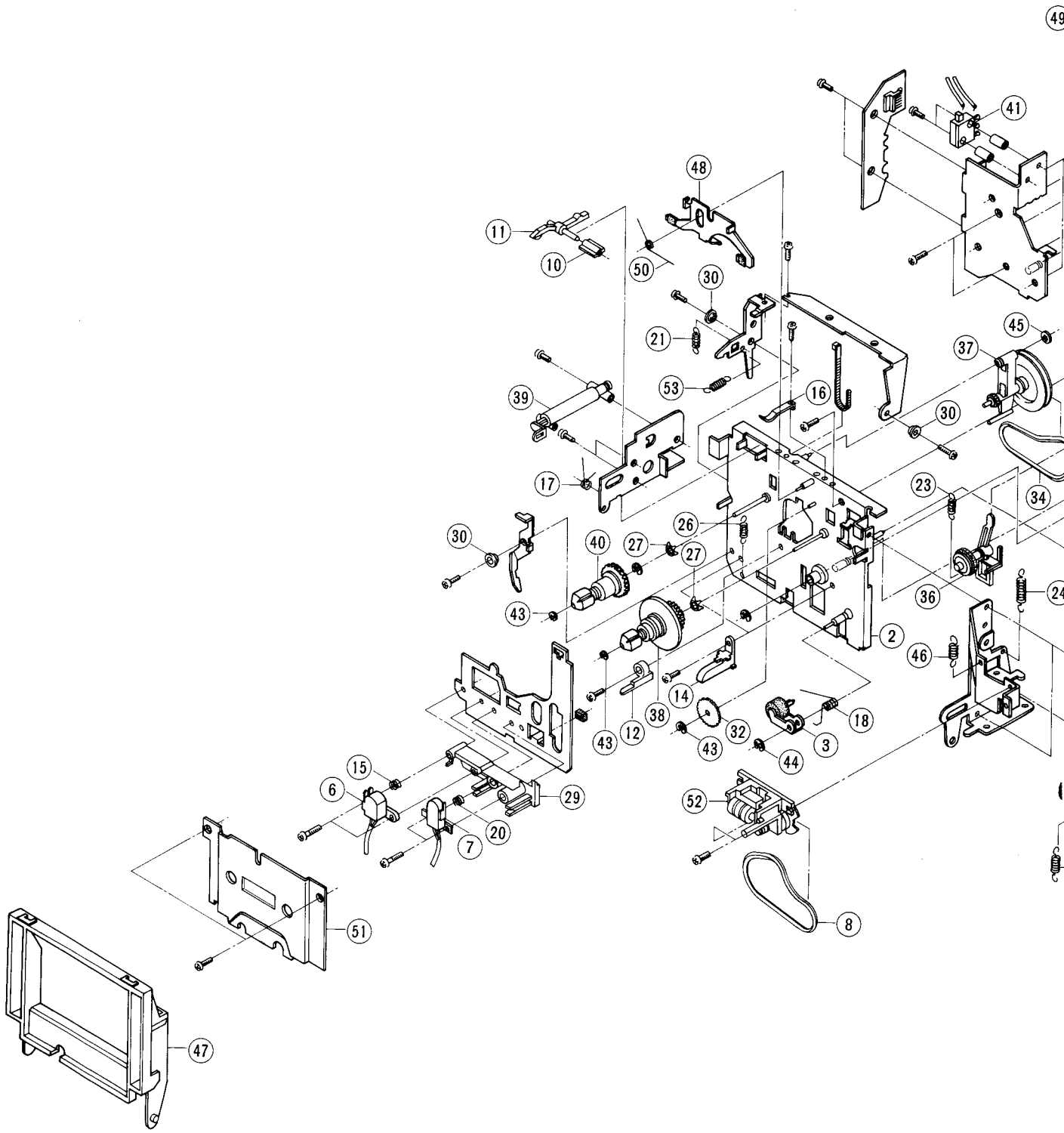
I. MODEL CS-F110/F12

1. RECOMMENDED SPARE PARTS

Because, if the parts listed below are on hand, almost any repair can be accomplished, we suggest that you stock these Recommended Spare parts Items.

REF. NO.	PARTS NO.	DESCRIPTION
1-1	BM-706361	⚠ MOTOR
1-2	BR-706399	SUPPLY REEL ASSY
1-3	BR-706397	TAKE-UP REEL ASSY
1-4	BT-332227	⚠ TRANS POWER T2028-AC
1-5	BT-332230	⚠ TRANS POWER T2028-BS
1-6	BT-332229	⚠ TRANS POWER T2028-EV
1-7	BT-332228	⚠ TRANS POWER T2028-U
1-8	ED-322982	D GERMA V 1S188FM-1-LR F07
1-9	ED-332243	D LED SLP-171D RED
1-10	ED-200468	D SILICON V DS448 VB3
1-11	ED-323979	D SILICON W03B F12 150/1.0A
1-12	EF-307178	⚠ FUSE EAWK T 250V 0.08A (F1)(B)
1-13	EF-593706	⚠ FUSE SEMKO T 250V 0.50A (F2)(E,B,S,V)
1-14	EF-601942	⚠ FUSE SEMKO T 250V 0.63A (F3)(E,B,S,V)
1-15	EF-327103	⚠ FUSE TSC A 250V 0.50A (F2)(U)
1-16	EF-306124	⚠ FUSE TSC A 250V 0.63A (F3)(U)
1-17	EF-309390	⚠ FUSE TSC 125V 0.50V (F2)(C,A)
1-18	EF-305703	⚠ FUSE TSC 125V 0.63A (F3)(C,A)
1-19	EI-315799	IC HA12019
1-20	EI-336784	IC LM1111C
1-21	EI-336759	IC TA78L008AP
1-22	EI-304657	IC TC4011BP
1-23	EI-330965	IC TC4049BP
1-24	EI-332425	IC TK11002
1-25	EJ-332415	PHONE J THROW HLJ0523-020 2×3P
1-26	EJ-336783	PHONE J THROW HLJ0523-220 2×3P
1-27	EM-332427	IND FL BG-96Z GRAPH
1-28	EP-706360	⚠ SOLENOID
1-29	EP-706401	⚠ SOLENOID
1-30	ER-328490	FILTER DB D07-001K 19KHZ
1-31	ER-328491	FILTER DB D07-003K 100KHZ
1-32	ES-312234	⚠ SW PUSH SDL-1P 01-1 E (U,E,B,S,V)
1-33	ES-312238	⚠ SW PUSH SDL-1P 01-1 UC (C,A)
1-34	ES-332412	SW LEVER 00230651 2-02-03N
1-35	ES-336781	SW LEVER 00430540 2-04-03S
1-36	ES-321274	SW LEVER 63349 2-06-03S
1-37	ES-706400	SW SLIDE
1-38	ES-332414	SW SOLENOID EMR-213007 30V 2S
1-39	ES-336780	SW TACT KHH10902
1-40	ET-311977	PHOTO SENSOR SPI-201
1-41	ET-332422	TR 2SB774 Q,R,S
1-42	ET-317919	TR 2SC1061 C,D
1-43	ET-603257	TR 2SC1312S G,H
1-44	ET-309353	TR 2SC2274 E,F
1-45	ET-200505	TR 2SC2603 E,F
1-46	ET-332421	TR 2SD1010 R,S
1-47	ET-332424	TR 2SD1111 AKAI
1-48	EV-332419	VR ROTARY 16P20×2J A503 A503
1-49	EV-336807	VR ROTARY 16P20×2K 1Z104
1-50	HE-706363	HEAD E HJ213270 C
1-51	HP-706362	HEAD REC/PB HN424977 C
1-52	MB-706365	BELT COUNTER
1-53	MB-706392	BELT MAIN
1-54	MB-706393	BELT SUB
1-55	MC-706413	COUNTER ME390-117
1-56	MI-706395	IDLER ASSY
1-57	MP-706359	PINCH ROLLER ASSY
1-58	TC-706396	CLUTCH ASSY
1-59	TC-706398	DAMPER ASSY
1-60	TC-706391	IDLER GEAR
1-61	TC-706390	PLAY GEAR

MECHA BLOCK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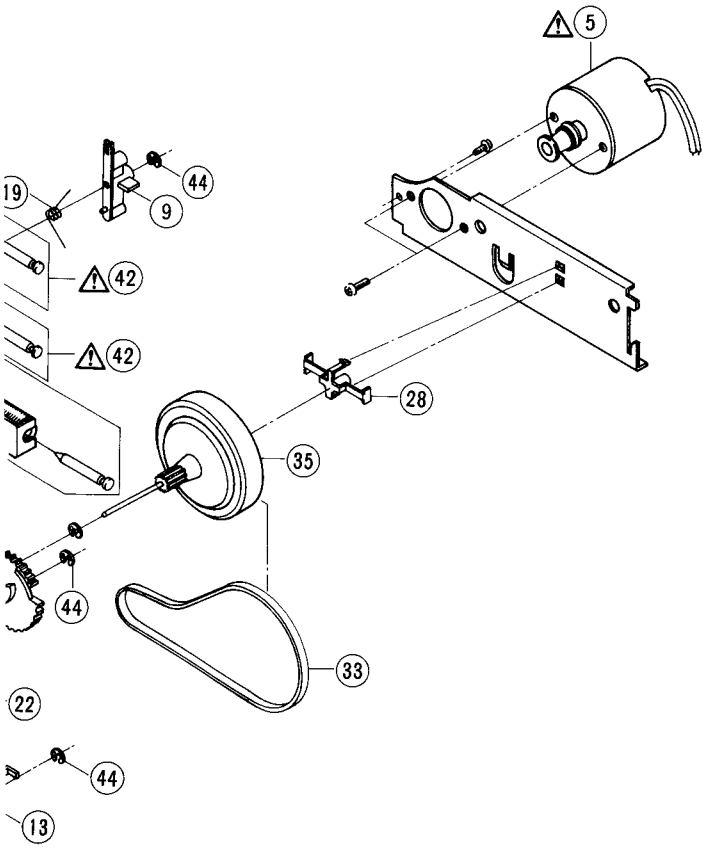


2. MECHA BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
2-1x	BZ-336355	MECHA ASSEMBLY FHE-7
2-2	BZ-706358	CHASSIS ASSY
2-3	MP-706359	PINCH ROLLER ASSY
2-4	EP-706360	⚠ SOLENOID
2-5	BM-706361	⚠ MOTOR
2-6	HP-706362	HEAD REC/PB HN424977 C
2-7	HE-706363	HEAD E HJ213270 C
2-8	MB-706365	BELT COUNTER
2-9	TC-706366	FF SOLENOID ARM
2-10	TC-706367	REC STOPPER
2-11	TC-706368	RECORD ARM
2-12	TC-706369	REFERENCE GUIDE
2-13	TC-706370	PLAY SOLENOID ARM
2-14	TC-706371	CASSETTE GUIDE
2-15	ZG-706372	SP AZIMUTH
2-16	ZG-706373	SP CASSETTE
2-17	ZG-706374	SP DOOR
2-18	ZG-706376	SP PINCH ROLLER
2-19	ZG-706377	SP SOLENOID BKT
2-20	ZG-706378	SP AZIMUTH
2-21	ZG-706379	SP LOCK ARM
2-22	ZG-706380	SP ASSIST BASE
2-23	ZG-706381	SP PLAY IDLER
2-24	ZG-706382	SP PLAY SOL ARM
2-25	ZG-706383	SP HEAD BASE
2-26	ZG-706384	SP HEAD BASE HOLDER
2-27	ZG-706385	SP BACK TENSION
2-28	TC-706387	F/W SPACER
2-29	HZ-706388	HEAD SPACER
2-30	TC-706389	SPACER
2-31	TC-706390	PLAY GEAR
2-32	TC-706391	IDLER GEAR
2-33	MB-706392	BELT MAIN
2-34	MB-706393	BELT SUB
2-35	BF-706394	FLYWHEEL ASSY
2-36	MI-706395	IDLER ASSY
2-37	TC-706396	CLUTCH ASSY
2-38	BR-706397	TAKE-UP REEL ASSY
2-39	TC-706398	DAMPER ASSY
2-40	BR-706399	SUPPLY REEL ASSY
2-41	ES-706400	SW SLIDE
2-42	EP-706401	SOLENOID
2-43	ZW-706402	LOCK WASHER
2-44	ZW-706403	LOCK WASHER
2-45	ZW-706404	LOCK WASHER
2-46	ZG-706405	SP EJECT RETURN LEVER
2-47	TC-706406	SUPPORT CASSETTE ASSY
2-48	TC-706407	BRAKE ASSY
2-49	TC-706409	BRAKE ARM
2-50	ZG-706411	SP BRAKE
2-51	TC-706412	DECORATION PLATE
2-52	MC-706413	COUNTER ME390-117
2-53	ZG-706414	SP BRAKE ARM

3. PRE AMP P.C BOARD BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
		PRE AMP P.C BOARD BLOCK
3-1	BA-T2027A050A	PC PRE AMP BLK CS-F110
3-2	BA-T2027A050B	PC PRE AMP BLK CS-F110-P
3-3	BA-T2027A050C	PC PRE AMP BLK CS-F12 (U) (U,C,A)
3-4	BA-T2027A050D	PC PRE AMP BLK CS-F12 (E) (E,B,S,V)
3-5	BA-T2027A050E	PC PRE AMP BLK CS-F12-P (U) (U,C,A)
3-6	BA-T2027A050F	PC PRE AMP BLK CS-F12-P (E) (E,B,S,V)
3-IC1	EI-332425	IC TK11002
3-IC2	EI-330965	IC TC4049BP
3-IC3	EI-304657	IC TC4011BP
3-IC4	EI-336784	IC LM1111C
3-TR1,2	ET-332422	TR 2SB774 Q,R,S
3-TR3	ET-200505	TR 2SC2603 E,F
3-TR4to10	ET-332424	⚠ TR 2SD1111 AKAI
3-TR11	ET-200505	TR 2SC2603 E,F
3-TR12,13	ET-603257	TR 2SC1312S G,H
3-TR14	ET-200505	TR 2SC2603 E,F
3-TR15	ET-309353	⚠ TR 2SC2274 E,F
3-TR16	ET-200558	TR 2SA1115 E,F
3-TR17	ET-328437	TR 2SD1012-V F,G
3-TR19	ET-200505	TR 2SC2603 E,F
3-TR20,21	ET-309353	TR 2SC2274 E,F
3-TR22	ET-317919	TR 2SC1061 C,D
3-TR23to26	ET-200505	TR 2SC2603 E,F
3-TR27	ET-603257	TR 2SC1312S G,H
3-TR28	ET-332421	TR 2SD1010 R,S
3-D1to6	ED-200468	D SILICON V DS448 VB3
3-D7	ED-317594	D SILICON H 1S2473HL F12
3-D8to13	ED-200468	D SILICON V DS448 VB3
3-D14	ED-323979	D SILICON W03B F12 150/1.0A
3-D15	ED-200468	D SILICON V DS448 VB3
3-D16,17	ED-323979	D SILICON W03B F12 150/1.0A
3-D18to20	ED-322982	D GERMA V 1S188FM-1-LR F07
3-D21to23	ED-200468	D SILICON V DS448 VB3
3-D24	ED-322982	D GERMA V 1S188FM-1-LR F07
3-D26	ED-200468	D SILICON V DS448 VB3
3-D27,28	ED-323979	D SILICON W03B F12 150/1.0A
3-D29,30	ED-328605	D GERMA H 1S188FM-1-LH SNP
3-D31,32	ED-200468	D SILICON V DS448 VB3
3-D35	ED-200468	D SILICON V DS448 VB3
3-J4	EJ-332435	PIN J P 4P (CS-F12) (U,C,A)
3-J4	EJ-332437	JACK PLATE (CS-F12) (E,B,S,V)
3-J5	EJ-336783	PHONE J THROW HLJ0523-220 2×3P (CS-F110) (CS-F12)
3-J5	EJ-332415	PHONE J THROW HLJ0523-020 2×3P (CS-F110-P) (CS-F12-P)
3-J6	EJ-332416	PHONE J 3P HLJ0328-020 6.3 (CS-F12/P)
3-SW1	ES-321274	SW LEVER 63349 2-06-03S
3-SW2	ES-336781	SW LEVER 00430540 2-04-03S
3-SW3	ES-332412	SW LEVER 00230651 2-02-03N
3-SW5	ES-332414	SW SOLENOID EMR-213007 30V 2S
3-VR2	EV-336807	VR ROTARY 16P20×2K 1Z104
3-VR4	EV-315541	R S-FIX H D8 3P 503
3-VR5	EV-315753	R S-FIX H D8 3P 203
3-VR6	EV-315542	R S-FIX H D8 3P 103
3-VR7	EV-315753	R S-FIX H D8 3P 203
3-VR8	EV-322417	R S-FIX H D8 3P 303
3-VR9	EV-336785	R S-FIX H TM8KV2-1S 3P 0.50W 104
3-VL1	EO-321336	COIL VARI 1 FE002 10MH
3-L1	EO-330239	COIL FIX 1 FL09H 390μH J
3-T1	EO-332420	COIL OSC 1 0365-047 100KHZ
3-FL1	EO-315758	COIL TUN 1 100S-431 100KHZ
3-FL3	ER-328490	FILTER DB D07-001K 19KHZ
3-FL4	ER-328491	FILTER DB D07-003K 100KHZ
3-FR1,2	ER-307565	⚠ R FUSE ERD2FC 1/4W 6R80G
3-C14	EC-325054	C STY V T05 500 331J 50DC
3-C16	EC-335414	C STY V T05 500 221J 50DC
3-C21	EC-335414	C STY V T05 500 221J 50DC
3-C27	EC-325055	C STY V T05 500 101J 50DC
3-C53	EC-326183	C PP V F10 PFH 182J 630DC
3-C65	EC-335464	C STY V T05 500 821J 50DC
3-C66	EC-325352	C MC V FM 151J 500DC
		VOLUME P.C BOARD BLOCK
3-VR3	EV-332419	VR ROTARY 16P20×2J A503 A503
		DETECTOR P.C BOARD BLOCK
3-PH1	ET-311977	PHOTO SENSOR SPI-201

4. POWER SUPPLY P.C BOARD BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
4-1	BA-T2027A070A	PC POWER BLK CS-F110 (U)
4-2	BA-T2027A070B	PC POWER BLK CS-F110 (C)
4-3	BA-T2027A070C	PC POWER BLK CS-F110 (E)
4-4	BA-T2027A070D	PC POWER BLK CS-F110 (B)
4-5	BA-T2027A070E	PC POWER BLK CS-F110 (S,V)
4-6	BA-T2027A070G	PC POWER BLK CS-F110 (A)
4-IC1	EI-336759	⚠ IC TA78L008AP
4-TR1	ET-200505	⚠ TR 2SC2603 E,F
4-TR2	ET-317919	⚠ TR 2SC1061 C,D
4-D1,2	ED-330319	⚠ D SILICON DBA10B 100/1.0A
4-D3	ED-316540	D ZENER H HZ20 1
4-VS1	MZ-283140	⚠ SOCKET SELECTER X-I7238 6P (U)
4-R3	ER-318430	R OMF H SNP FS 1W 102J
4-C1	EC-320548	⚠ C CE V F 103Z 250AC (U,A)
4-C1	EC-314688	⚠ C CE V FZ 103P 125AC (C)
4-C1	EC-330308	⚠ C MMY V ECQUF 103M 250AC (E,B,S,V)

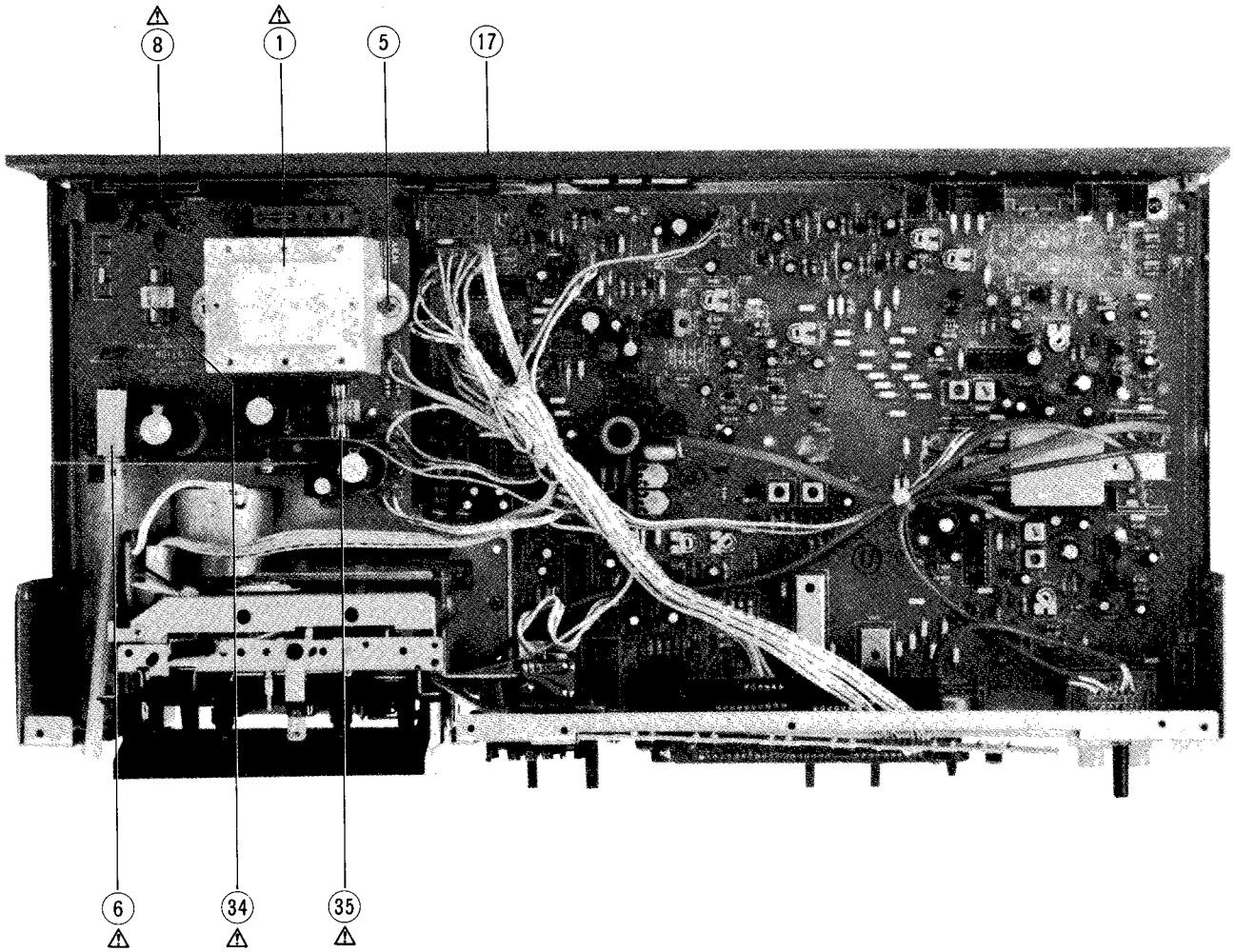
5. OPERATION P.C BOARD BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
5-SW1to6	ES-336780	SW TACT KHH10902
5-D1	ED-332243	D LED SLP-171D RED

6. METER P.C BOARD BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
6-IN1	EM-332427	IND FL BG-96Z GRAPH
6-IC1	EI-315799	IC HA12019

ASSEMBLY BLOCK

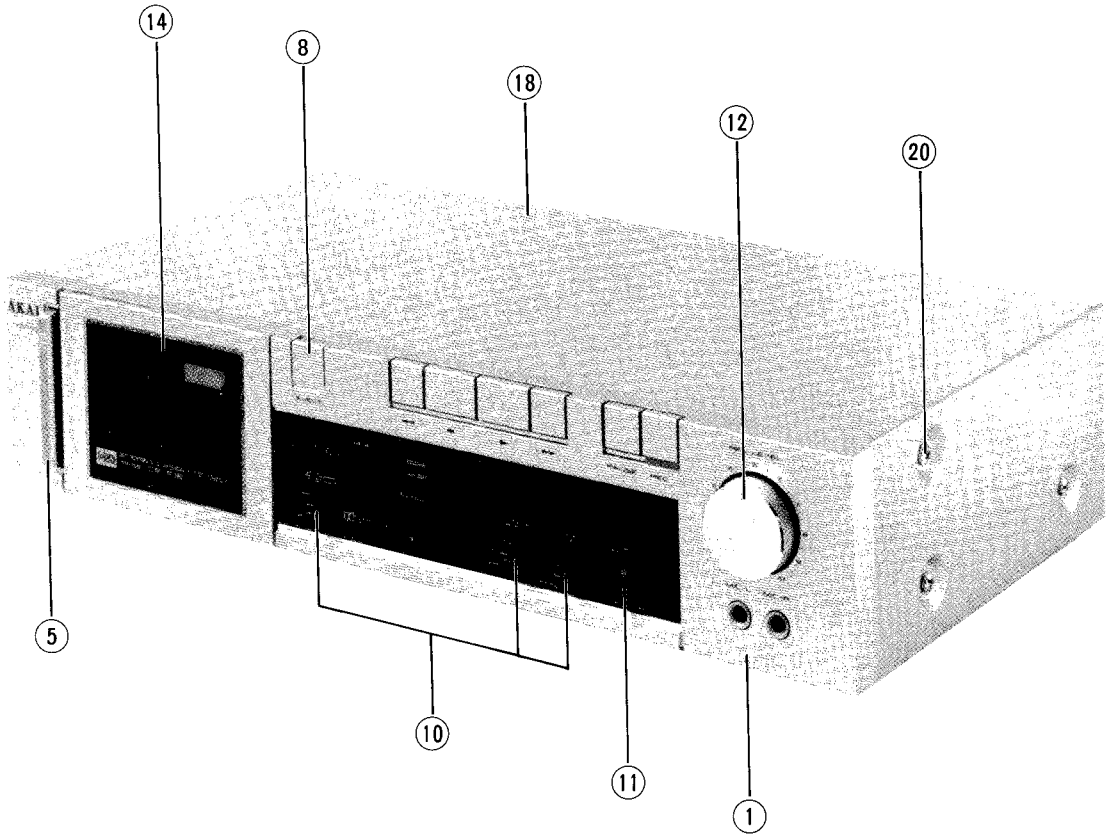


7. ASSEMBLY BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
	POWER BLOCK	
7-1	BT-332228	⚠ TRANS POWER T2028-U
7-2x	BT-332227	⚠ TRANS POWER T2028-AC
7-3x	BT-332229	⚠ TRANS POWER T2028-EV
7-4x	BT-332230	⚠ TRANS POWER T2028-BS
7-5	ZS-312116	ST BID40x20STL CMT
7-6	ES-312234	⚠ SW PUSH SDL-1P 01-1 E (U,E,B,S,V)
7-7x	ES-312238	⚠ SW PUSH SDL-1P 01-1 UC (C,A)
7-8	EW-306428	⚠ AC CORD 2 CORES KP-205A, VFF J (U)
7-9x	EW-305691	⚠ AC CORD 2 CORES KP-8, SPT-1 UC (C,A)
7-10x	EW-313882	⚠ AC CORD 2 CORES KP-419C, LTCE-2F E (E)
7-11x	EW-322400	⚠ AC CORD 2 CORES GTBS-2F/KS-15 B (B)
7-12x	EW-322401	⚠ AC CORD 2 CORES KP-560/S-15 S (S)
7-13x	EW-315767	⚠ AC CORD 2 CORES KP-419C/KS-15 E (V)
7-14x	SZ-631945	STRAIN RELIEF SR-4N-4 (U,C,A)
7-15x	EJ-310567	⚠ SOCKET INLET 0378PC-GS E 2P (B,S,V)
7-16x	ZS-447840	T2BR30x08STL CMT

REF. NO.	PARTS NO.	DESCRIPTION
	ASSEMBLY BLOCK	
7-17	SP-336670A	PANEL REAR BOARD CS-F12 (U) AS
7-18x	SP-336670C	PANEL REAR BOARD CS-F12 (C) AS
7-19x	SP-336670D	PANEL REAR BOARD CS-F12 (A) AS
7-20x	SP-336670E	PANEL REAR BOARD CS-F12 (E) AS
7-21x	SP-336670G	PANEL REAR BOARD CS-F12 (B,S) AS
7-22x	SP-336670F	PANEL REAR BOARD CS-F12 (V) AS
7-23x	SP-332594A	PANEL REAR BOARD CS-F110 (U) AS
7-24x	SP-332594C	PANEL REAR BOARD CS-F110 (C) AS
7-25x	SP-332594D	PANEL REAR BOARD CS-F110 (A) AS
7-26x	SP-332594E	PANEL REAR BOARD CS-F110 (E) AS
7-27x	SP-332594G	PANEL REAR BOARD CS-F110(B,S) AS
7-28x	SP-332594F	PANEL REAR BOARD CS-F110 (V) AS
7-29x	ZW-331567	T2BR30x08STL CMT C080
7-30x	SA-202118	FOOT
7-31x	ZW331567	T2BR30x08STL CMT C080
7-32x	SA-336217	FOOT
7-33x	ZW-305013	RV POP32 (A)
7-34	EF-327103	⚠ FUSE TSC A 250V 0.50A (F2) (U)
7-35	EF-306124	⚠ FUSE TSC A 250V 0.63A (F3) (U)
7-36x	EF-309390	⚠ FUSE TSC 125V 0.50V (F2) (C,A)
7-37x	EF-305703	⚠ FUSE TSC 125V 0.63A (F3) (C,A)
7-38x	EF-307178	⚠ FUSE EAWK T 250V 0.08A (F1) (B)
7-39x	EF-593706	⚠ FUSE SEMKO T 250V 0.50A (F2) (E,B,S,V)
7-40x	EF-601942	⚠ FUSE SEMKO T 250V 0.63A (F3) (E,B,S,V)

FINAL ASSEMBLY BLOCK



8. FINAL ASSEMBLY BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
	FRONT PANEL BLOCK	
8-1	BD-B332598A2	PANEL FRONT PART (CS-F12)
8-2x	BA-B332598B2	PANEL FRONT-P PART (CS-F12-P)
8-3x	BD-B332598A1	PANEL FRONT PART (CS-F110)
8-4x	BD-B332598B1	PANEL FRONT-P PART (CS-F110-P)
8-5	SK-332589A	KNOB POWER
8-6x	SK-332589B	KNOB POWER-P
8-7x	ZG-332762	SP PUSH KNOB
8-8	SK-332601A	KNOB EJECT
8-9x	SK-332601B	KNOB EJECT-P
	FINAL ASSEMBLY BLOCK	
8-10	SK-332590A	KNOB SW (A)
8-11	SK-332591A	KNOB VR (A)
8-12	SK-332592A	KNOB VR (B)
8-13x	SK-332592B	KNOB VR (B)-P
8-14	BD-B332596A2	LID PANEL PART (CS-F12)
8-15x	BD-B332596B2	LID PANEL-P PART (CS-F12-P)
8-16x	BD-B332596A1	LID PANEL PART (CS-F110)
8-17x	BD-B332596B1	LID PANEL-P PART (CS-F110-P)
8-18	SP-332593A	COVER UPPER
8-19x	SP-332593B	COVER UPPER-P
8-20	ZS-315878	XST BID40x08STL NI3
8-21x	ZS-310588	XST BID40x08STL BNI

NOTE
-P : Shadow pearl

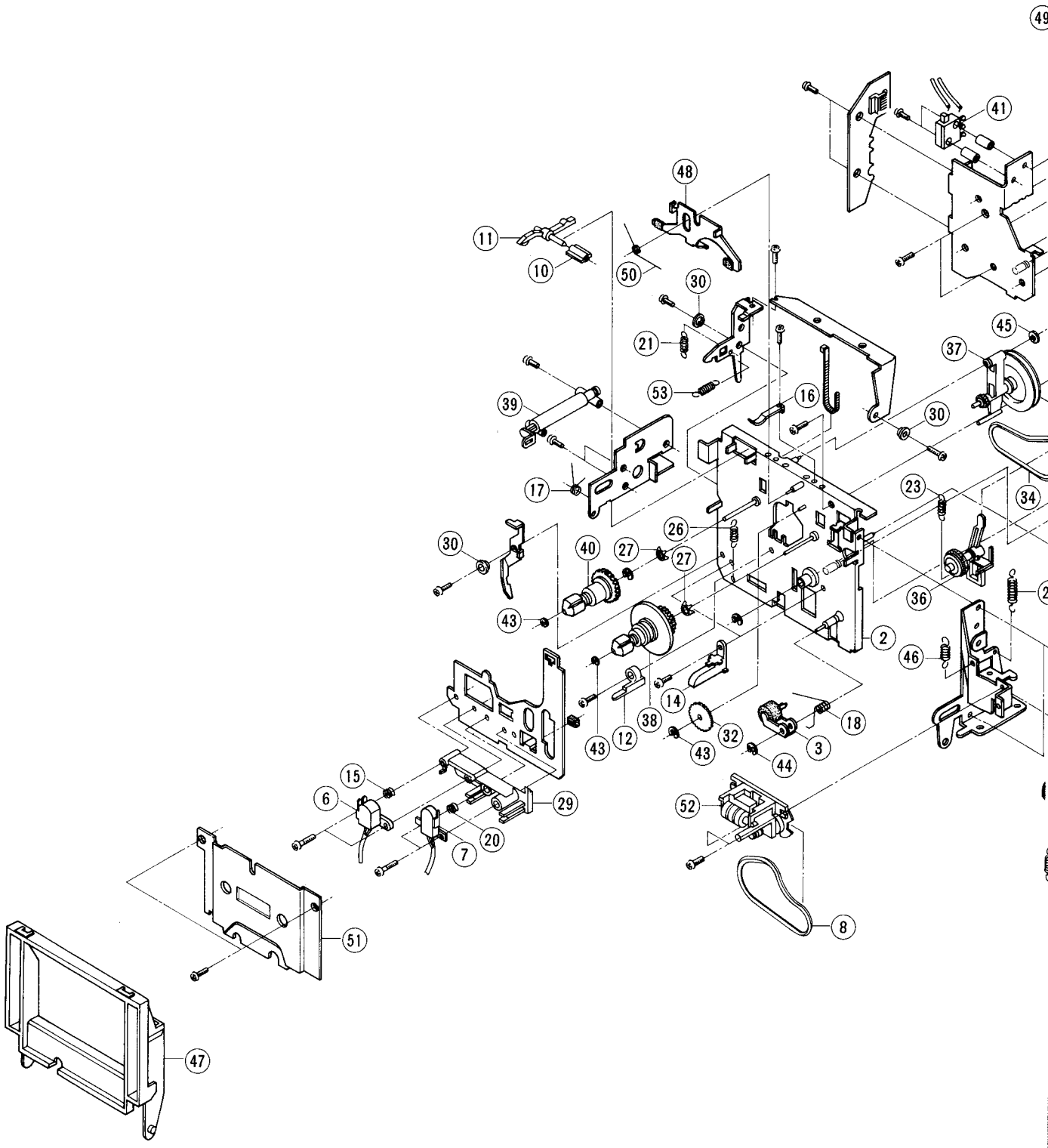
II. MODEL CS-F210/J

1. RECOMMENDED SPARE PARTS

Because, if the parts listed below are on hand, almost any repair can be accomplished, we suggest that you stock these Recommended Spare parts Items.

REF. NO.	PARTS NO.	DESCRIPTION
1-1	BM-706361	⚠ MOTOR
1-2	BT-332227	⚠ TRANS POWER T2028-AC
1-3	BT-332230	⚠ TRANS POWER T2028-BS
1-4	BT-332229	⚠ TRANS POWER T2028-EV
1-5	BT-332231	⚠ TRANS POWER T2028-J
1-6	BT-332228	⚠ TRANS POWER T2028-U
1-7	ED-328605	D GERMA H 1S188FM-1-LH SNP
1-8	ED-322982	D GERMA V 1S188FM-1-LR F07
1-9	ED-332243	D LED SLP-171D RED
1-10	ED-336786	D LED SLP-271D GRN
1-11	ED-332244	D LED SLP-471D YLW
1-12	ED-330319	D SILICON DBA10B 100/1.0A
1-13	ED-317594	D SILICON H 1S2473HL F12
1-14	ED-200468	D SILICON V DS448 VB3
1-15	ED-323979	D SILICON W03B F12 150/1.0A
1-16	ED-316540	D ZENER H HZ20 1
1-17	EF-307178	⚠ FUSE EAWK T 250V 0.08A (F1)(E)
1-18	EF-593706	⚠ FUSE SEMKO T 250V 0.50A (F2)(E,B,S,V)
1-19	EF-601942	⚠ FUSE SEMKO T 250V 0.63A (F3)(E,B,S,V)
1-20	EF-327103	⚠ FUSE TSC A 250V 0.50A (F2)(U,J)
1-21	EF-306124	⚠ FUSE TSC A 250V 0.63A (F3)(U,J)
1-22	EF-309390	⚠ FUSE TSC 125V 0.50V (F2)(C,A)
1-23	EF-305703	⚠ FUSE TSC 125V 0.63A (F3)(C,A)
1-24	EI-315799	IC HA12019
1-25	EI-336784	IC LM1111C
1-26	EI-336759	IC TA78L008AP
1-27	EI-304657	IC TC4011BP
1-28	EI-330965	IC TC4049BP
1-29	EI-332425	IC TK11002
1-30	EM-332427	IND FL BG-96Z GRAPH
1-31	EO-332420	COIL OSC 1 0365-047 100KHZ
1-32	EP-706360	⚠ SOLENOID
1-33	EP-706401	⚠ SOLENOID
1-34	ES-312234	⚠ SW PUSH SDL-1P 01-1 E
1-35	ES-312235	⚠ SW PUSH SDL-1P 01-1 J
1-36	ES-312238	⚠ SW PUSH SDL-1P 01-1 UC
1-37	ES-332413	SW LEVER 00220670 2-02-02N
1-38	ES-332412	SW LEVER 00230651 2-02-03N
1-39	ES-336781	SW LEVER 00430540 2-04-03S
1-40	ES-321274	SW LEVER 63349 2-06-03S
1-41	ES-706400	SW SLIDE
1-42	ES-332414	SW SOLENOID EMR-213007 30V 2S
1-43	ET-311977	PHOTO SENOSOR SPI-201
1-44	ET-200558	TR 2SA1115 E,F
1-45	ET-332422	TR 2SB774 Q,R,S
1-46	ET-317919	TR 2SC1061 C,D
1-47	ET-603257	TR 2SC1312S G,H
1-48	ET-308937	TR 2SC2130 G,H
1-49	ET-309353	TR 2SC2274 E,F
1-50	ET-200505	TR 2SC2603 E,F
1-51	ET-332421	TR 2SD1010 R,S
1-52	ET-328437	TR 2SD1012-V F,G
1-53	ET-332424	TR 2SD1111 AKAI
1-54	EV-332417	VR ROTARY 16P20x2I B103 B103
1-55	EV-332419	VR ROTARY 16P20x2J A503 A503
1-56	EV-336807	VR ROTARY 16P20x2K 1Z104
1-57	HE-706363	HEAD E HJ213270 C
1-58	HP-706362	HEAD REC/PB HN424977 C
1-59	MB-706365	BELT COUNTER
1-60	MB-706392	BELT MAIN
1-61	MB-706393	BELT SUB
1-62	MC-706413	COUNTER ME390-117
1-63	MI-706395	IDLER ASSY
1-64	MP-706359	PINCH ROLLER ASSY

MECHA BLOCK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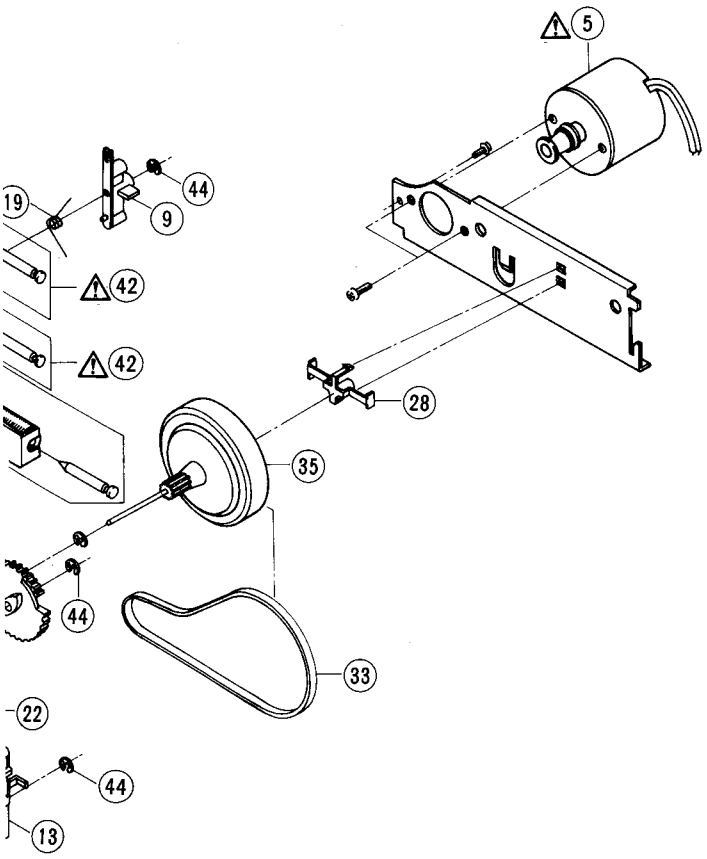


2. MECHA BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
2-1x	BZ-336355	MECHA ASSEMBLY FHE-7
2-2	BZ-706358	CHASSIS ASSY
2-3	MP-706359	PINCH ROLLER ASSY
2-4	EP-706360	⚠ SOLENOID
2-5	BM-706361	⚠ MOTOR
2-6	HP-706362	HEAD REC/PB HN424977 C
2-7	HE-706363	HEAD E HJ213270 C
2-8	MB-706365	COUNTER BELT
2-9	TC-706366	FF SOLENOID ARM
2-10	TC-706367	REC STOPPER
2-11	TC-706368	RECORD ARM
2-12	TC-706369	REFERENCE GUIDE
2-13	TC-706370	PLAY SOLENOID ARM
2-14	TC-706371	CASSETTE GUIDE
2-15	ZG-706372	SP AZIMUTH
2-16	ZG-706373	SP CASSETTE
2-17	ZG-706374	SP DOOR
2-18	ZG-706376	SP PINCH ROLLER
2-19	ZG-706377	SP SOLENOID BKT
2-20	ZG-706378	SP AZIMUTH
2-21	ZG-706379	SP LOCK ARM
2-22	ZG-706380	SP ASSIST BASE
2-23	ZG-706381	SP PLAY IDLER
2-24	ZG-706382	SP PLAY SOL ARM
2-25	ZG-706383	SP HEAD BASE
2-26	ZG-706384	SP HEAD BASE HOLDER
2-27	ZG-706385	SP BACK TENSION
2-28	TC-706387	F/W SPACER
2-29	HZ-706388	HEAD SPACER
2-30	TC-706389	SPACER
2-31	TC-706390	PLAY GEAR
2-32	TC-706391	IDLER GEAR
2-33	MB-706392	BELT MAIN
2-34	MB-706393	BELT SUB
2-35	BF-706394	FLYWHEEL ASSY
2-36	MI-706395	IDLER ASSY
2-37	TC-706396	CLUTCH ASSY
2-38	BR-706397	TAKE-UP REEL ASSY
2-39	TC-706398	DAMPER ASSY
2-40	BR-706399	SUPPLY REEL ASSY
2-41	ES-706400	SW SLIDE
2-42	EP-706401	⚠ SOLENOID
2-43	ZW-706402	LOCK WASHER
2-44	ZW-706403	LOCK WASHER
2-45	ZW-706404	LOCK WASHER
2-46	ZG-706405	SP EJECT RETURN LEVER
2-47	TC-706406	SUPPORT CASSETTE ASSY
2-48	TC-706407	BRAKE ASSY
2-49	TC-706409	BRAKE ARM
2-50	ZG-706411	SP BRAKE
2-51	TC-706412	DECORATION PLATE
2-52	MC-706413	COUNTER ME390-117
2-53	ZG-706414	SP BRAKE ARM

3. PRE AMP P.C BOARD BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
3-1	BA-T2028A050A	PC PRE AMP BLK CS-F210 (U,C,A,E,B,S,V)
3-2	BA-T2028A050B	PC PRE AMP BLK CS-F210-P (U,C,A,E,B,S,V)
3-3	BA-T2028A050C	PC PRE AMP BLK CS-F210-J (J)
3-4	BA-T2028A050D	PC PRE AMP BLK CS-F210-JP (J)
	PRE AMP P.C BOARD BLOCK	
3-IC1	EI-332425	IC TK11002
3-IC2	EI-330965	IC TC4049BP
3-IC3	EI-304657	IC TC4011BP
3-IC4	EI-336784	IC LM1111C
3-TR1,2	ET-332422	TR 2SB774 Q,R,S
3-TR3	ET-200505	TR 2SC2603 E,F
3-TR4to10	ET-332424	⚠ TR 2SD1111 AKAI
3-TR11	ET-200505	TR 2SC2603 E,F
3-TR12,13	ET-603257	TR 2SC1312S G,H
3-TR14	ET-200505	TR 2SC2603 E,F
3-TR15	ET-309353	⚠ TR 2SC2274 E,F
3-TR16	ET-200558	TR 2SA1115 E,F (J)
3-TR17	ET-328437	TR 2SD1012-V F,G (J)
3-TR18	ET-328437	TR 2SD1012-V F,G
3-TR19	ET-200505	TR 2SC2603 E,F
3-TR20,21	ET-309353	TR 2SC2274 E,F
3-TR22	ET-317919	TR 2SC1061 C,D
3-TR23to26	ET-200505	TR 2SC2603 E,F
3-TR28	ET-332421	TR 2SD1010 R,S
3-TR29	ET-200505	TR 2SC2603 E,F
3-TR31,32	ET-200505	TR 2SC2603 E,F
3-TR33	ET-308937	TR 2SC2130 G,H
3-D1to6	ED-200468	D SILICON V DS448 VB3
3-D7	ED-317594	D SILICON H 1S2473HL F12
3-D8to13	ED-200468	D SILICON V DS448 VB3
3-D14	ED-323979	D SILICON W03B F12 150/1.0A
3-D15	ED-200468	D SILICON V DS448 VB3
3-D16,17	ED-323979	D SILICON W03B F12 150/1.0A
3-D18to20	ED-322982	D GERMA V 1S188FM-1-LR F07
3-D21to23	ED-200468	D SILICON V DS448 VB3
3-D24,25	ED-322982	D GERMA V 1S188FM-1-LR F07
3-D26	ED-200468	D SILICO V DS448 VB3
3-D27,28	ED-323979	D SILICON W03B F12 150/1.0A
3-D29,30	ED-328605	D GERMA H 1S188FM-1-LH SNP
3-D31to35	ED-200468	D SILICON V DS448 VB3
3-D37	ED-200468	D SILICON V DS448 VB3
3-J3	EJ-324276	DIN J TCS4680-01-111 P 8P (J)
3-J4	EJ-332435	PIN J P 4P (J)
3-J5	EJ-336783	PHONE J THROW HLJ0523-220 2×3P
3-J5	EJ-332415	PHONE J THROW HLJ0523-020 2×3P (P)
3-J6	EJ-332416	PHONE J 3P HLJ0328-020 6.3 (J)
3-SW1	ES-321274	SW LEVER 63349 2-06-03S
3-SW2	ES-336781	SW LEVER 00430540 2-04-03S
3-SW3	ES-332412	SW LEVER 00230651 2-02-03N
3-SW4	ES-332413	SW LEVER 00220670 2-02-02N
3-SW5	ES-332414	SW SOLENOID EMR-213007 30V 2S
3-VR1	EV-332417	VR ROTARY 16P20×2I B103 B103
3-VR2	EV-336807	VR ROTARY 16P20×2K 1Z104
3-VR4	EV-315413	R S-FIX H D8 3P 503
3-VR5	EV-315414	R S-FIX H D8 3P 203
3-VR6	EV-315416	R S-FIX H D8 3P 103
3-VR7	EV-315414	R S-FIX H D8 3P 203
3-VR8	EV-322416	R S-FIX H D8 3P 303
3-VR9	EV-336785	R S-FIX H TM8KV2-1S 3P 0.50W 104
3-VL1	EO-321336	COIL VARI 1 FE002 10MH
3-L1	EO-330239	COIL FIX 1 FL09H 390μH J
3-T1	EO-332420	COIL OSC 1 0365-047 100KHZ
3-FL1	EO-315758	COIL TUN 1 100S-431 100KHZ
3-FL3	ER-328490	FILTER DB D07-001K 19KHZ
3-FL4	ER-328491	FILTER DB D07-003K 100KHZ
3-FR1,2	ER-307565	⚠ R FUSE ERD2FC 1/4W 6R80G
3-C14	EC-325054	C STY V T05 500 331J 50DC
3-C16	EC-335414	C STY V T05 500 221J 50DC
3-C21	EC-335414	C STY V T05 500 221J 50DC
3-C27	EC-325055	C STY V T05 500 101J 50DC
3-C53	EC-326138	C PP V F10 PFH 182J 630DC
3-C65	EC-335464	C STY V T05 500 821J 50DC
3-C66	EC-325352	C MC V FM 151J 500DC
	VOLUME P.C BOARD BLOCK	
3-VR3	EV-332419	VR ROTARY 16P20×2J A503 A503
	DETECTOR P.C BOARD BLOCK	
3-PH1	ET-311977	PHOTO SENSOR SPI-201

4. POWER SUPPLY P.C BOARD BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
4-1	BA-T2027A070A	PC POWER BLK CS-F110 (U)
4-2	BA-T2027A070B	PC POWER BLK CS-F110 (C)
4-3	BA-T2027A070C	PC POWER BLK CS-F110 (E)
4-4	BA-T2027A070D	PC POWER BLK CS-F110 (B)
4-5	BA-T2027A070E	PC POWER BLK CS-F110 (S,V)
4-6	BA-T2027A070F	PC POWER BLK CS-F210J
4-7	BA-T2027A070G	PC POWER BLK CS-F110 (A)
4-IC1	EI-336759	⚠ IC TA78L008AP
4-TR1	ET-200505	⚠ TR 2SC2603 E,F
4-TR2	ET-317919	⚠ TR 2SC1061 C,D
4-D1,2	ED-330319	⚠ D SILICON DBA10B 100/1.0A
4-D3	ED-316540	D ZENER H HZ20 1
4-VS1	MZ-283140	⚠ SOCKET SELECTER X-I7238 6P (U)
4-R3	ER-318430	R OMF H SNP FS 1W 102J
4-C1	EC-320548	⚠ C CE V F 103Z 250AC (U,J,A)
4-C1	EC-314688	⚠ C CE V FZ 103P 125AC (C)
4-C1	EC-330308	⚠ C MMY V ECQUF 103M 250AC (E,B,S,V)

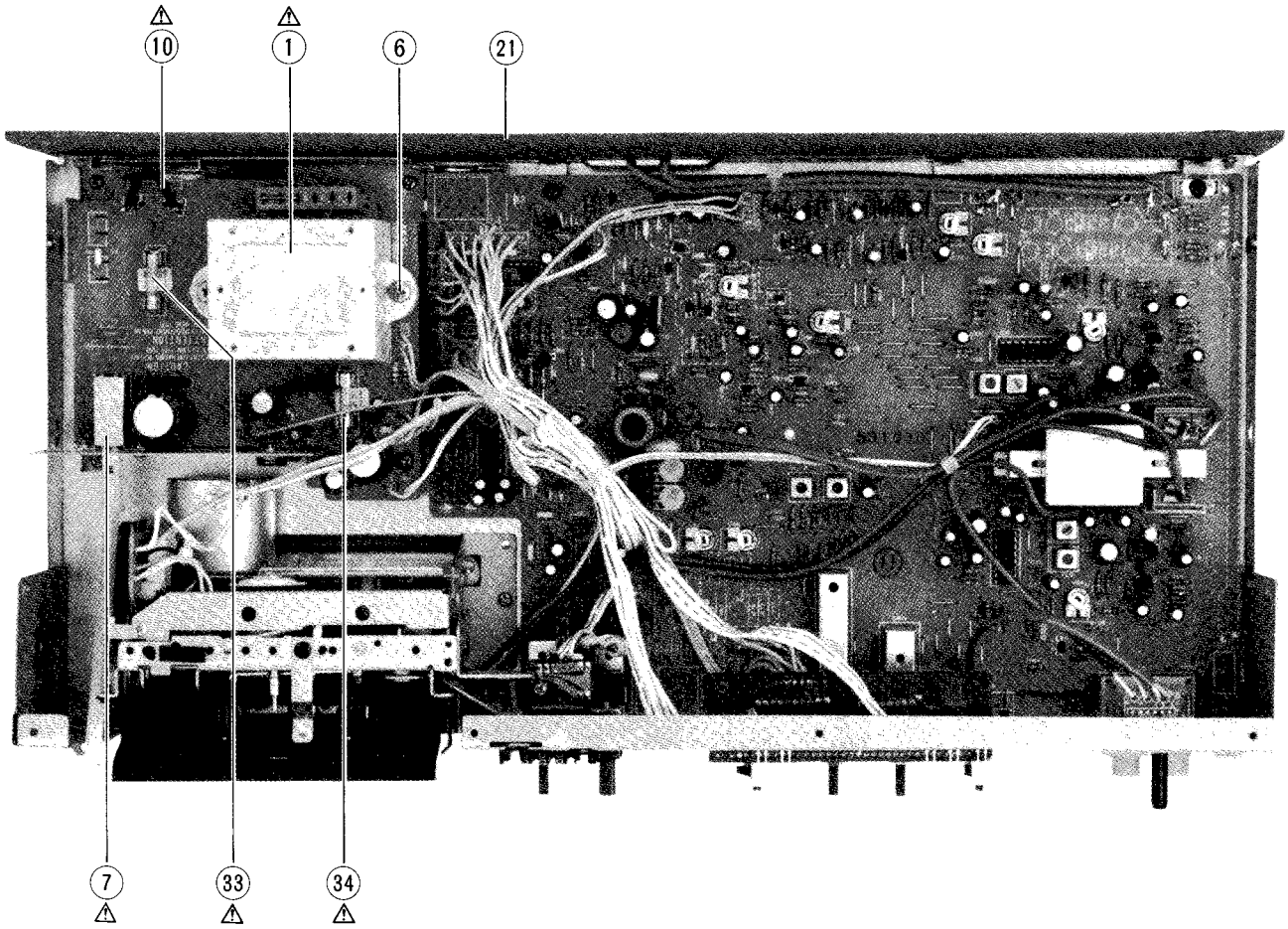
5. OPERATE P.C BOARD BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
5-D1	ED-332243	D LED SLP-171D RED
5-D2	ED-336786	D LED SLP-271D GRN
5-D3	ED-332244	D LED SLP-471D YLW

6. METER P.C BOARD BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
6-IN1	EM-332427	IND FL BG-96Z GRAPH
6-IC1	EI-315799	IC HA12019

ASSEMBLY BLOCK



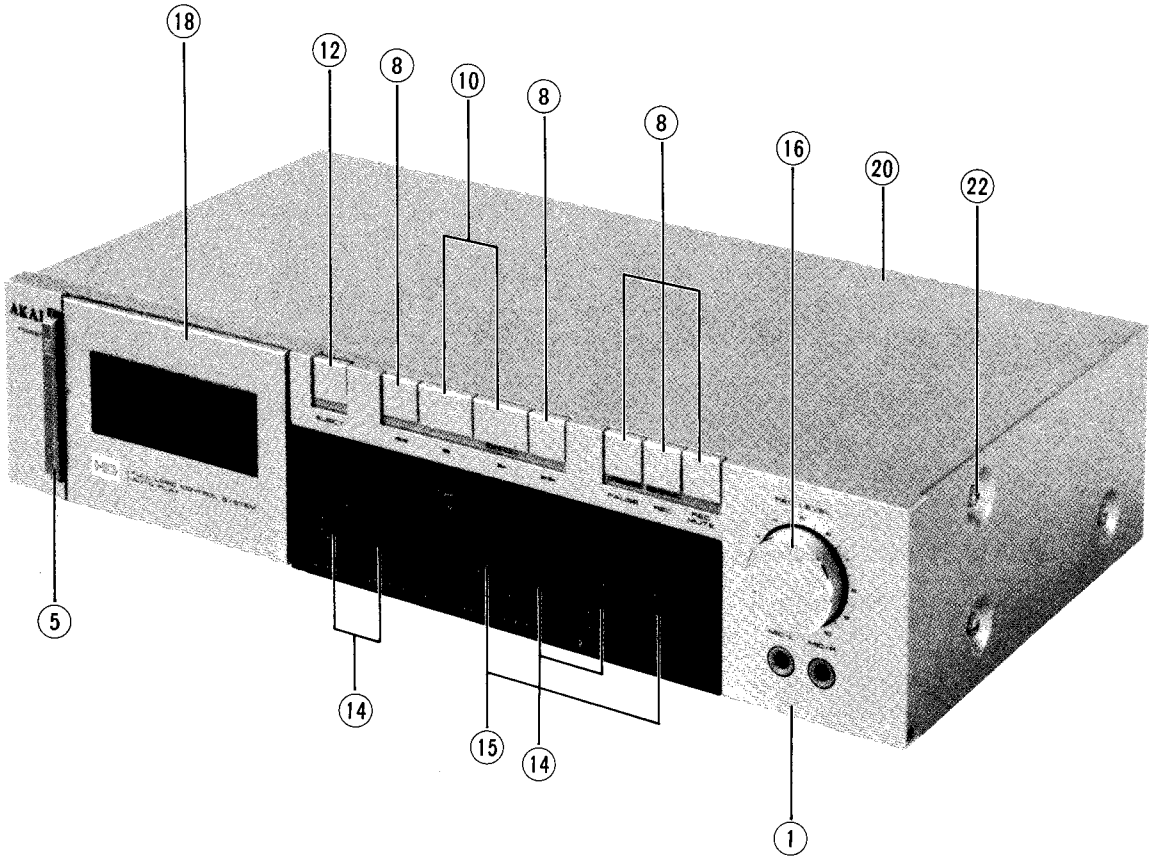
7. ASSEMBLY BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
	POWER BLOCK	
7-1	BT-332228	⚠ TRANS POWER T2028-U
7-2x	BT-332227	⚠ TRANS POWER T2028-AC
7-3x	BT-332229	⚠ TRANS POWER T2028-EV
7-4x	BT-332230	⚠ TRANS POWER T2028-BS
7-5x	BT-332231	⚠ TRANS POWER T2028-J
7-6	ZS-312116	ST BID40x20STL CMT
7-7	ES-312234	⚠ SW PUSH SDL-1P 01-1 E(U,E,B,S,V)
7-8x	ES-312238	⚠ SW PUSH SDL-1P 01-1 UC (C,A)
7-9x	ES-312235	⚠ SW PUSH SDL-1P 01-1 J (J)
7-10	EW-306428	⚠ AC CORD 2 CORES KP-205A, VFF J (U)
7-11x	EW-305691	⚠ AC CORD 2 CORES KP-8, SPT-1 UC (C,A)
7-12x	EW-313882	⚠ AC CORD 2 CORES KP-419C, LTCE-2F E (E)
7-13x	EW-306427	⚠ AC CORD 2 CORES KP-211, VFF J (J)
7-14x	EW-322400	⚠ AC CORD 2 CORES GTBS-2F/KS-15 B (B)
7-15x	EW-322401	⚠ AC CORD 2 CORES KP-560/S-15 S(S)
7-16x	EW-315767	⚠ AC CORD 2 CORES KP-419C/KS-15 E (V)
7-17x	SZ-631945	STRAIN RELIEF SR-4N-4 (U,C,A,J,E)
7-18x	EJ-310567	⚠ SOCKET INLET 0378PC-GS E 2P (B,S,V)
7-19x	ZS-447840	T2BR30x08STL CMT
7-20x	ZW-698308	RV NYL30x055 BL (J)

REF. NO.	PARTS NO.	DESCRIPTION
	ASSEMBLY BLOCK	
7-21	SP-332761A	PANEL REAR BOARD CS-F210 (U)
7-22x	SP-332761B	PANEL REAR BOARD CS-F210 (J)
7-23x	SP-332761C	PANEL REAR BOARD CS-F210 (C)
7-24x	SP-332761D	PANEL REAR BOARD CS-F210 (A)
7-25x	SP-332761E	PANEL REAR BOARD CS-F210 (E)
7-26x	SP-332761F	PANEL REAR BOARD CS-F210 (V)
7-27x	SP-332761G	PANEL REAR BOARD CS-F210 (B,S)
7-28x	ZW-331567	T2BR30x08STL CMT C080
7-29x	SA-202118	FOOT
7-30x	ZW-331567	T2BR30x08STL CMT C080
7-31x	SA-336217	FOOT
7-32x	ZW-305013	RV POP32
7-33	EF-327103	⚠ FUSE TSC A 250V 0.50A (F2) (U,J)
7-34	EF-306124	⚠ FUSE TSC A 250V 0.63A (F3) (U)
7-35x	EF-309390	⚠ FUSE TSC 125V 0.50V (F2) (C,A)
7-36x	EF-305703	⚠ FUSE TSC 125V 0.63A (F3) (C,A)
7-37x	EF-307178	⚠ FUSE EAWK T 250V 0.08A (F1) (E)
7-38x	EF-593706	⚠ FUSE SEMKO T 250V 0.50A (F2) (E,B,S,V)
7-39x	EF-601942	⚠ FUSE SEMKO T 250V 0.63A (F3) (E,B,S,V)
7-40x	EF-306124	⚠ FUSE TSC A 250V 0.63A (F3) (J)
7-41x	SP-332626	COVER BOTTOM
7-42x	ZS-200676	T2CTS30x06STL CMT

When ordering parts, please quote Parts Number, Description and Model Number.

FINAL ASSEMBLY BLOCK



8. FINAL ASSEMBLY BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
8-1	BD-B332620A1	PANEL FRONT PART
8-2x	BD-B332620B1	PANEL FRONT P PART
8-3x	BD-B332620A2	PANEL FRONT PART (J)
8-4x	BD-B332620B2	PANEL FRONT P PART (J)
8-5	SK-332589A	KNOB POWER
8-6x	SK-332589B	KNOB POWER-P
8-7x	ZG-332762	SP PUSH KNOB
8-8	SK-332627A	KNOB OPERATE (A)
8-9x	SK-332627B	KNOB OPERATE (A)-P
8-10	SK-332619A	KNOB OPERATE (B)
8-11x	SK-332619B	KNOB OPERATE (B)-P
8-12	SK-332799A	KNOB EJECT
8-13x	SK-332799B	KNOB EJECT-P
8-14	SK-332590A	KNOB SW (A)
8-15	SK-332591A	KNOB VR (A)
8-16	SK-332592A	KNOB VR (B)
8-17x	SK-332592B	KNOB VR (B)-P
8-18	BD-B332621A1	LID PANEL PART
8-19x	BD-B332621A2	LID PANEL P PART
8-20	SP-332593A	COVER UPPER
8-21x	SP-332593B	COVER UPPER-P
8-22	ZS-315878	XST BID40x08STL NI3
8-23x	ZS-310588	XST BID40x08STL BNI

NOTE
-P : Shadow pearl

INDEX

1. MODEL CS-F110/F12

PARTS NO.	REF. NO.	PARTS NO.	REF. NO.	PARTS NO.	REF. NO.	PARTS NO.	REF. NO.
BA-B332598B2	8-2x	EF-309390	7-36x	EV-336807	3-VR2	ZG-706373	2-16
BA-T2027A050A	3-1	EF-327103	7-34	EW-305691	7-9x	ZG-706374	2-17
BA-T2027A050B	3-2	EF-593706	7-39x	EW-306428	7-8	ZG-706376	2-18
BA-T2027A050C	3-3	EF-601942	7-40x	EW-313882	7-10x	ZG-706377	2-19
BA-T2027A050D	3-4	EI-304657	3-IC3	EW-315767	7-13x	ZG-706378	2-20
BA-T2027A050E	3-5	EI-315799	6-IC1	EW-322400	7-11x	ZG-706379	2-21
BA-T2027A050F	3-6	EI-330965	3-IC2	EW-322401	7-12x	ZG-706380	2-22
BA-T2027A070A	4-1	EI-332425	3-IC1	HE-706363	2-7	ZG-706381	2-23
BA-T2027A070B	4-2	EI-336759	4-IC1	HP-706362	2-6	ZG-706382	2-24
BA-T2027A070C	4-3	EI-336784	3-IC4	HZ-706388	2-29	ZG-706383	2-25
BA-T2027A070D	4-4	EJ-310567	7-15x	MB-706365	2-8	ZG-706384	2-26
BA-T2027A070E	4-5	EJ-332415	3-J5	MB-706392	2-33	ZG-706385	2-27
BA-T2027A070G	4-6	EJ-332416	3-J6	MB-706393	2-34	ZG-706405	2-46
BD-B332596A1	8-16x	EJ-332435	3-J4	MC-706413	2-52	ZG-706411	2-50
BD-B332596A2	8-14	EJ-332437	3-J4	MI-706395	2-36	ZG-706414	2-53
BD-B332596B1	8-17x	EJ-336783	3-J5	MP-706359	2-3	ZS-310588	8-21x
BD-B332596B2	8-15x	EM-332427	6-IN1	MZ-283140	4-VS1	ZS-312116	7-5
BD-B332598A1	8-3x	EO-315758	3-FL1	SA-202118	7-30x	ZS-315878	8-20
BD-B332598A2	8-1	EO-321336	3-VL1	SA-336217	7-32x	ZS-447840	7-16x
BD-B332598B1	8-4x	EO-330239	3-L1	SK-332589A	8-5	ZW-305013	7-33x
BF-706394	2-35	EO-332420	3-T1	SK-332589B	8-6x	ZW-331567	7-29x
BM-706361	2-5	EP-706360	2-4	SK-332590A	8-10	ZW-331567	7-31x
BR-706397	2-38	EP-706401	2-42	SK-332591A	8-11	ZW-706402	2-43
BR-706399	2-40	ER-307565	3-FR1,2	SK-332592A	8-12	ZW-706403	2-44
BT-332227	7-2x	ER-318430	4-R3	SK-332592B	8-13x	ZW-706404	2-45
BT-332228	7-1	ER-328490	3-FL3	SK-332601A	8-8		
BT-332229	7-3x	ER-328491	3-FL4	SK-332601B	8-9x		
BT-332230	7-4x	ES-312234	7-6	SP-332593A	8-18		
BZ-336355	2-1x	ES-312238	7-7x	SP-332593B	8-19x		
BZ-706358	2-2	ES-321274	3-SW1	SP-332594A	7-23x		
EC-314688	4-C1	ES-332412	3-SW3	SP-332594C	7-24x		
EC-320548	4-C1	ES-332414	3-SW5	SP-332594D	7-25x		
EC-325054	3-C14	ES-336780	5-SW1to6	SP-332594E	7-26x		
EC-325055	3-C27	ES-336781	3-SW2	SP-332594F	7-28x		
EC-325352	3-C66	ES-706400	2-41	SP-332594G	7-27x		
EC-326138	3-C53	ET-200505	3-TR3	SP-336670A	7-17		
EC-330308	4-C1	ET-200505	3-TR11	SP-336670C	7-18x		
EC-335414	3-C16	ET-200505	3-TR14	SP-336670D	7-19x		
EC-335414	3-C21	ET-200505	3-TR19	SP-336670E	7-20x		
EC-335464	3-C65	ET-200505	3-TR23to26	SP-336670F	7-22x		
ED-200468	3-D1to6	ET-200505	4-TR1	SP-336670G	7-21x		
ED-200468	3-D8to13	ET-200558	3-TR16	SZ-631945	7-14x		
ED-200468	3-D15	ET-309353	3-TR15	TC-706366	2-9		
ED-200468	3-D21to23	ET-309353	3-TR20,21	TC-706367	2-10		
ED-200468	3-D31,32	ET-311977	3-PH1	TC-706368	2-11		
ED-200468	3-D26	ET-317919	3-TR22	TC-706369	2-12		
ED-200468	3-D35	ET-317919	4-TR2	TC-706370	2-13		
ED-316540	4-D3	ET-328437	3-TR17	TC-706371	2-14		
ED-317594	3-D7	ET-332421	3-TR28	TC-706387	2-28		
ED-322982	3-D18to20	ET-332422	3-TR1,2	TC-706389	2-30		
ED-322982	3-D24	ET-332424	3-TR4to10	TC-706390	2-31		
ED-323979	3-D14	ET-603257	3-TR12,13	TC-706391	2-32		
ED-323979	3-D16,17	ET-603257	3-TR27	TC-706396	2-37		
ED-323979	3-D27,28	EV-315541	3-VR4	TC-706398	2-39		
ED-328605	3-D29,30	EV-315542	3-VR6	TC-706406	2-47		
ED-330319	4-D1,2	EV-315753	3-VR5	TC-706407	2-48		
ED-332243	5-D1	EV-315753	3-VR7	TC-706409	2-49		
EF-305703	7-37x	EV-322417	3-VR8	TC-706412	2-51		
EF-306124	7-35	EV-332419	3-VR3	ZG-332762	8-7x		
EF-307178	7-38x	EV-336785	3-VR9	ZG-706372	2-15		

2. MODEL CS-F210/J

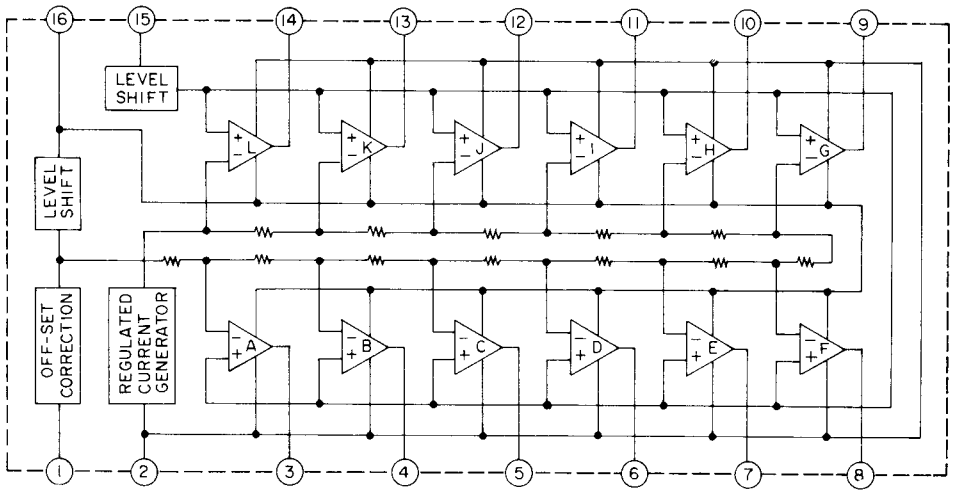
PARTS NO.	REF. NO.	PARTS NO.	REF. NO.	PARTS NO.	REF. NO.	PARTS NO.	REF. NO.
BA-T2027A070A	4-1	EF-307178	7-37x	EV-315414	3-VR7	TC-706398	2-39
BA-T2027A070B	4-2	EF-309390	7-35x	EV-315416	3-VR6	TC-706406	2-47
BA-T2027A070C	4-3	EF-327103	7-33	EV-322416	3-VR8	TC-706407	2-48
BA-T2027A070D	4-4	EF-593706	7-38x	EV-332417	3-VR1	TC-706409	2-49
BA-T2027A070E	4-5	EF-601942	7-39x	EV-332419	3-VR3	TC-706412	2-51
BA-T2027A070F	4-6	EI-304657	3-IC3	EV-336785	3-VR9	ZG-332762	8-7x
BA-T2027A070G	4-7	EI-315799	6-IC1	EV-336807	3-VR2	ZG-706372	2-15
BA-T2028A050A	3-1	EI-330965	3-IC2	EW-305691	7-11x	ZG-706373	2-16
BA-T2028A050B	3-2	EI-332425	3-IC1	EW-306427	7-13x	ZG-706374	2-17
BA-T2028A050C	3-3	EI-336759	4-IC1	EW-306428	7-10	ZG-706376	2-18
BA-T2028A050D	3-4	EI-336784	3-IC4	EW-313882	7-12x	ZG-706377	2-19
BD-B332620A1	8-1	EJ-310567	7-18x	EW-315767	7-16x	ZG-706378	2-20
BD-B332620A2	8-3x	EJ-324276	3-J3	EW-322400	7-14x	ZG-706379	2-21
BD-B332620B1	8-2x	EJ-332415	3-J5	EW-322401	7-15x	ZG-706380	2-22
BD-B332620B2	8-4x	EJ-332416	3-J6	HE-706363	2-7	ZG-706381	2-23
BD-B332621A1	8-18	EJ-332435	3-J4	HP-706362	2-6	ZG-706382	2-24
BD-B332621A2	8-19x	EJ-336783	3-J5	HZ-706388	2-29	ZG-706383	2-25
BF-706394	2-35	EM-332427	6-IN1	MB-706365	2-8	ZG-706384	2-26
BM-706361	2-5	EO-315758	3-FL1	MB-706392	2-33	ZG-706385	2-27
BR-706397	2-38	EO-321336	3-VL1	MB-706393	2-34	ZG-706405	2-46
BR-706399	2-40	EO-330239	3-L1	MC-706413	2-52	ZG-706411	2-50
BT-332227	7-2x	EO-332420	3-T1	MI-706395	2-36	ZG-706414	2-53
BT-332228	7-1	EP-706360	2-4	MP-706359	2-3	ZS-200676	7-42x
BT-332229	7-3x	EP-706401	2-42	MZ-283140	4-VS1	ZS-310588	8 23x
BT-332230	7-4x	ER-307565	3-FR1,2	SA-202118	7-29x	ZS-312116	7-6
BT-332231	7-5x	ER-318430	4-R3	SA-336217	7-31x	ZS-315878	8-22
BZ-336355	2-1x	ER-328490	3-FL3	SK-332589A	8-5	ZS-447840	7-19x
BZ-706358	2-2	ER-328491	3-FL4	SK-332589B	8-6x	ZW-305013	7-32x
EC-314688	4-C1	ES-312234	7-7	SK-332590A	8-14	ZW-331567	7-28x
EC-320548	4-C1	ES-312235	7-9x	SK-332591A	8-15	ZW-331567	7-30x
EC-325054	3-C14	ES-312238	7-8x	SK-332592A	8-16	ZW-698308	7-20x
EC-325055	3-C27	ES-321274	3-SW1	SK-332592B	8-17x	ZW-706402	2-43
EC-325352	3-C66	ES-332412	3-SW3	SK-332619A	8-10	ZW-706403	2-44
EC-326138	3-C53	ES-332413	3-SW4	SK-332619B	8-11x	ZW-706404	2-45
EC-330308	4-C1	ES-332414	3-SW5	SK-332627A	8-8		
EC-335414	3-C16	ES-336781	3-SW2	SK-332627B	8-9x		
EC-335414	3-C21	ES-706400	2-41	SK-332799A	8-12		
EC-335464	3-C65	ET-200505	3-TR3	SK-332799B	8-13x		
ED-200468	3-D1to6	ET-200505	3-TR11	SP-332593A	8-20		
ED-200468	3-D8to13	ET-200505	3-TR14	SP-332593B	8-21x		
ED-200468	3-D15	ET-200505	3-TR19	SP-332626	7-41		
ED-200468	3-D21to23	ET-200505	3-TR23to26	SP-332761A	7-21		
ED-200468	3-D26	ET-200505	3-TR29	SP-332761B	7-22x		
ED-200468	3-D31to35	ET-200505	3-TR31,32	SP-332761C	7-23x		
ED-200468	3-D37	ET-200505	4-TR1	SP-332761D	7-24x		
ED-316540	4-D3	ET-200558	3-TR16	SP-332761E	7-25x		
ED-317594	3-D7	ET-308937	3-TR33	SP-332761F	7-26x		
ED-322982	3-D18to20	ET-309353	3-TR15	SP-332761G	7-27x		
ED-322982	3-D24,25	ET-309353	3-TR20,21	SZ-631945	7-17x		
ED-323979	3-D14	ET-311977	3-PH1	TC-706366	2-9		
ED-323979	3-D16,17	ET-317919	3-TR22	TC-706367	2-10		
ED-323979	3-D27,28	ET-317919	4-TR2	TC-706368	2-11		
ED-328605	3-D29,30	ET-328437	3-TR17	TC-706369	2-12		
ED-330319	4-D1,2	ET-328437	3-TR18	TC-706370	2-13		
ED-332243	5-D1	ET-332421	3-TR28	TC-706371	2-14		
ED-332244	5-D3	ET-332422	3-TR1,2	TC-706387	2-28		
ED-336786	5-D2	ET-332424	3-TR4to10	TC-706389	2-30		
EF-305703	7-36x	ET-603257	3-TR12,13	TC-706390	2-31		
EF-306124	7-34	EV-315413	3-VR4	TC-706391	2-32		
EF-306124	7-40x	EV-315414	3-VR5	TC-706396	2-37		

SECTION 3

SCHEMATIC DIAGRAM

1. SCHEMATIC DIAGRAM OF ICs
2. CS-F110 NO. 1622432A SCHEMATIC DIAGRAM
3. CS-F12 NO. 1622433A SCHEMATIC DIAGRAM
4. CS-F210J NO. 1622434A SCHEMATIC DIAGRAM
5. CS-F210 NO. 1622435A SCHEMATIC DIAGRAM

HA12019



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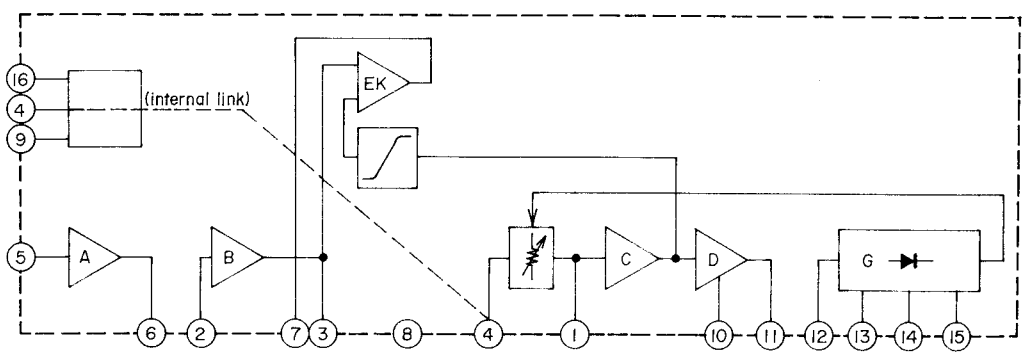

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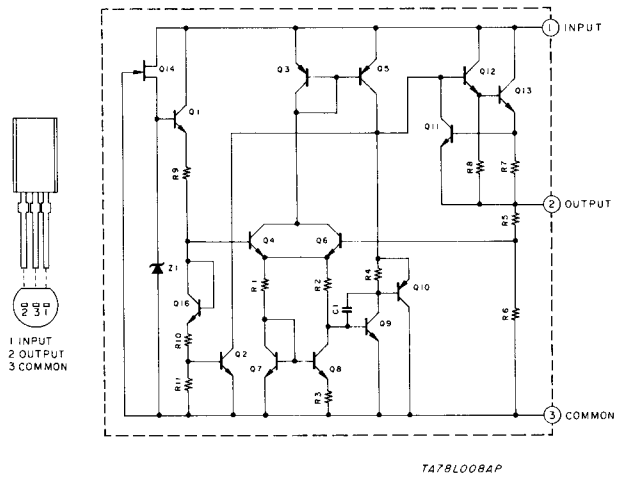

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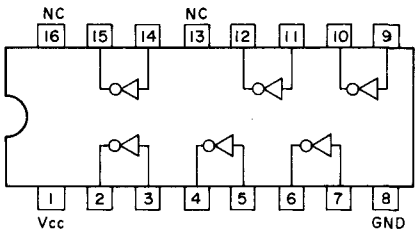

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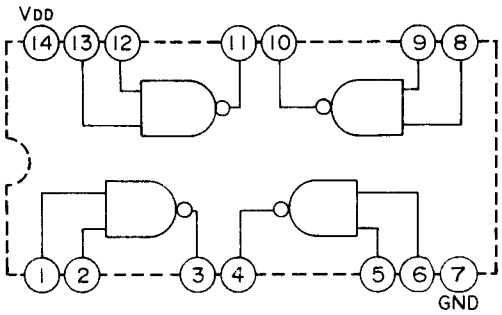

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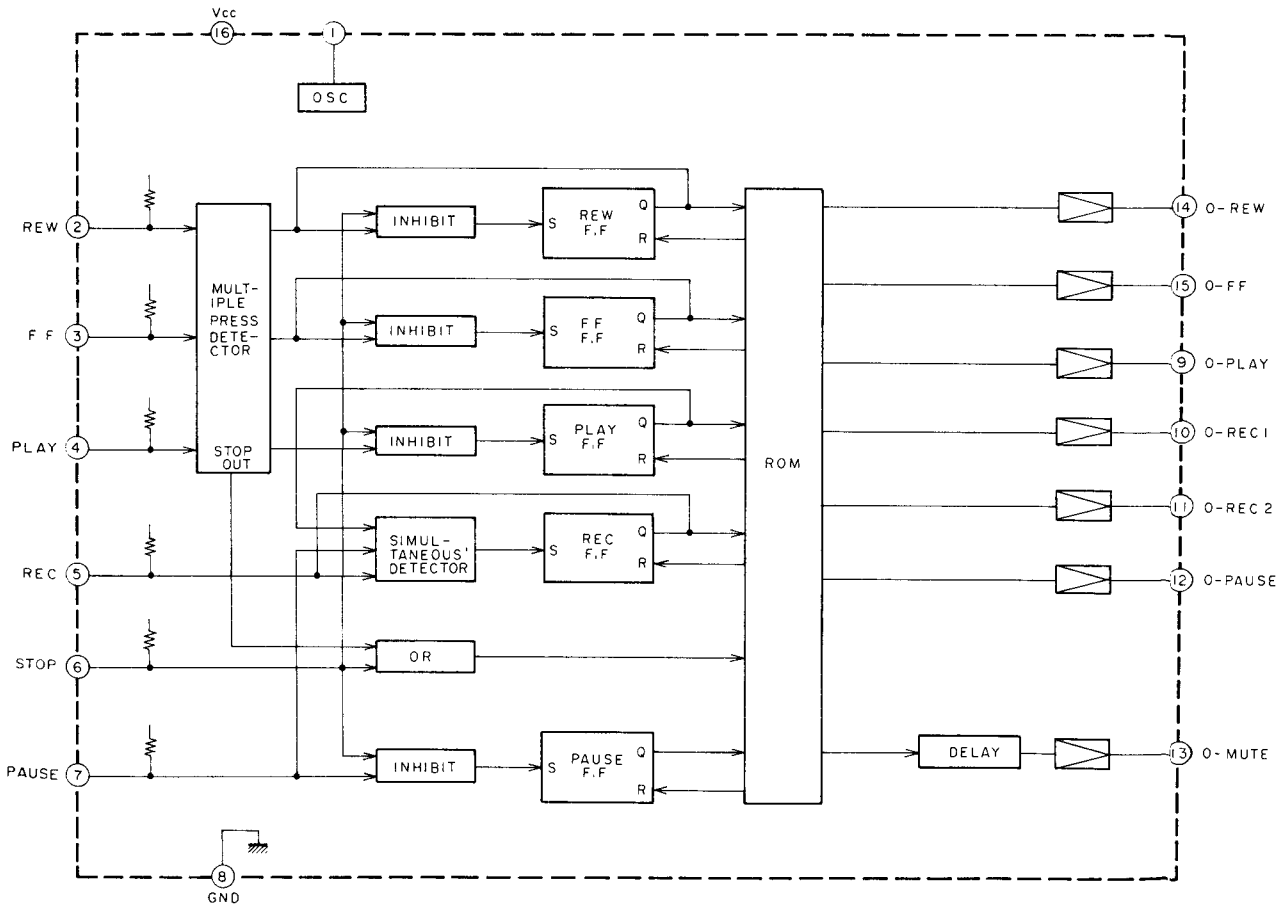
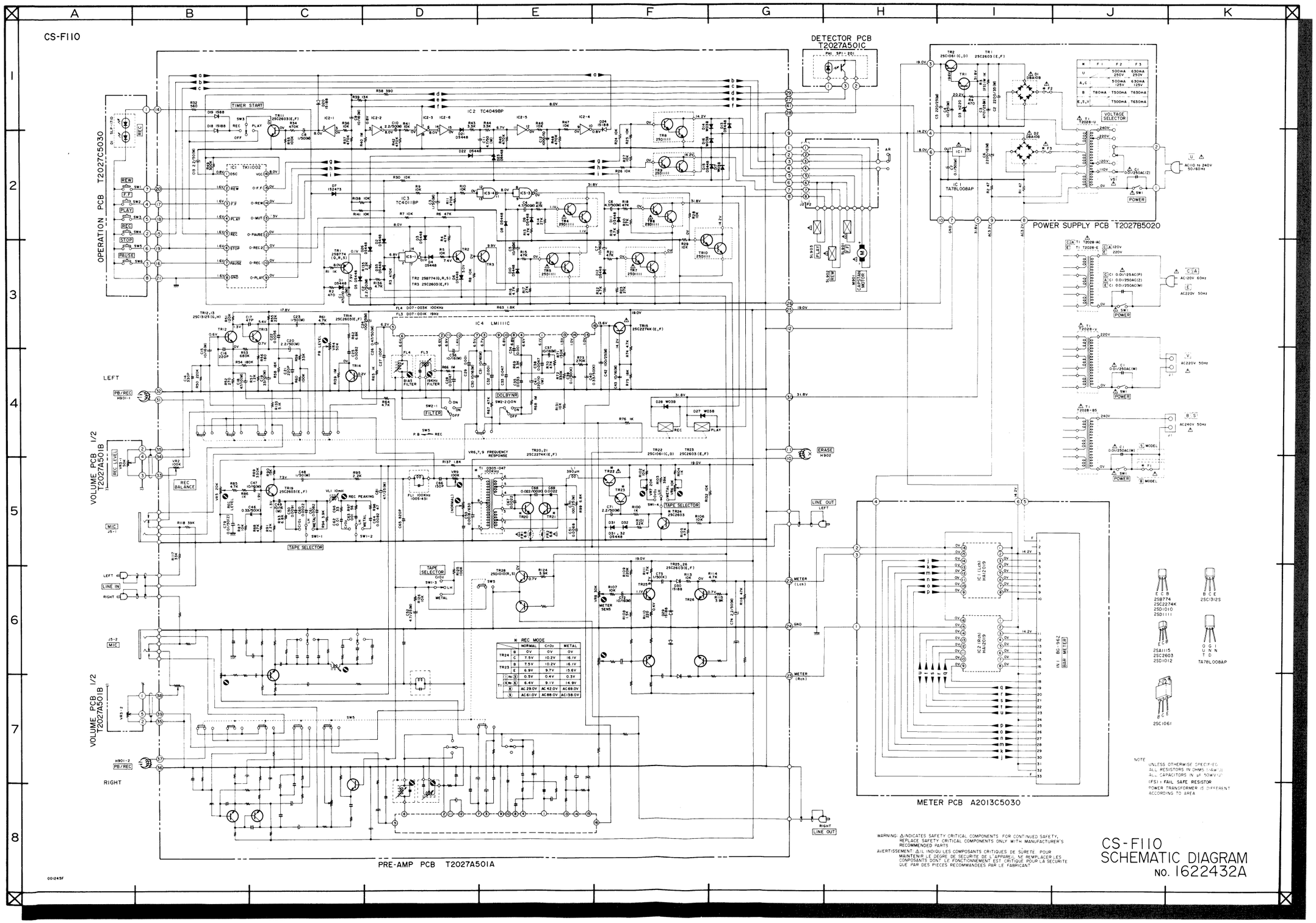
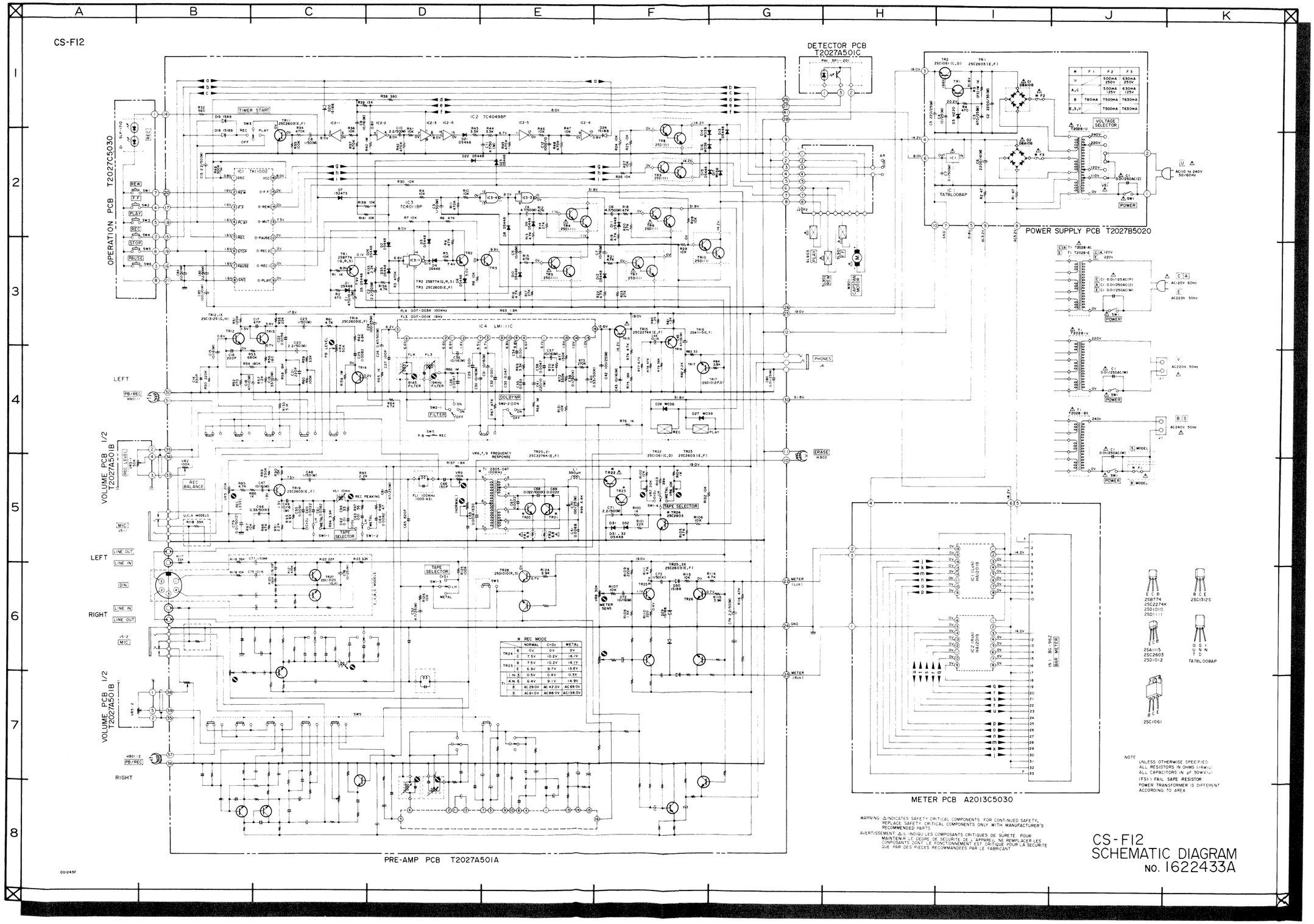


CS-F110



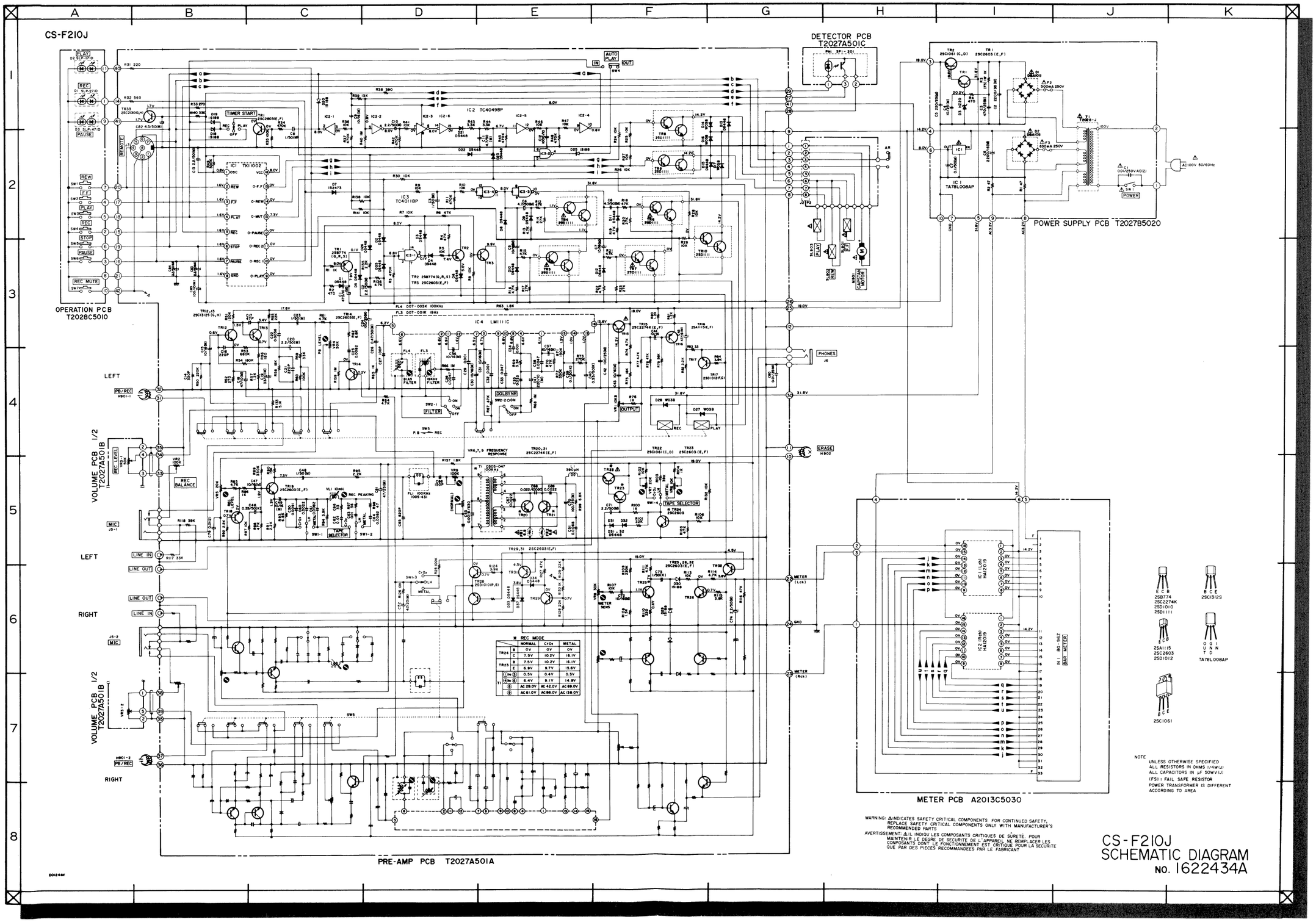
CS-F110 SCHEMATIC DIAGRAM NO. 1622432A

CS-F12

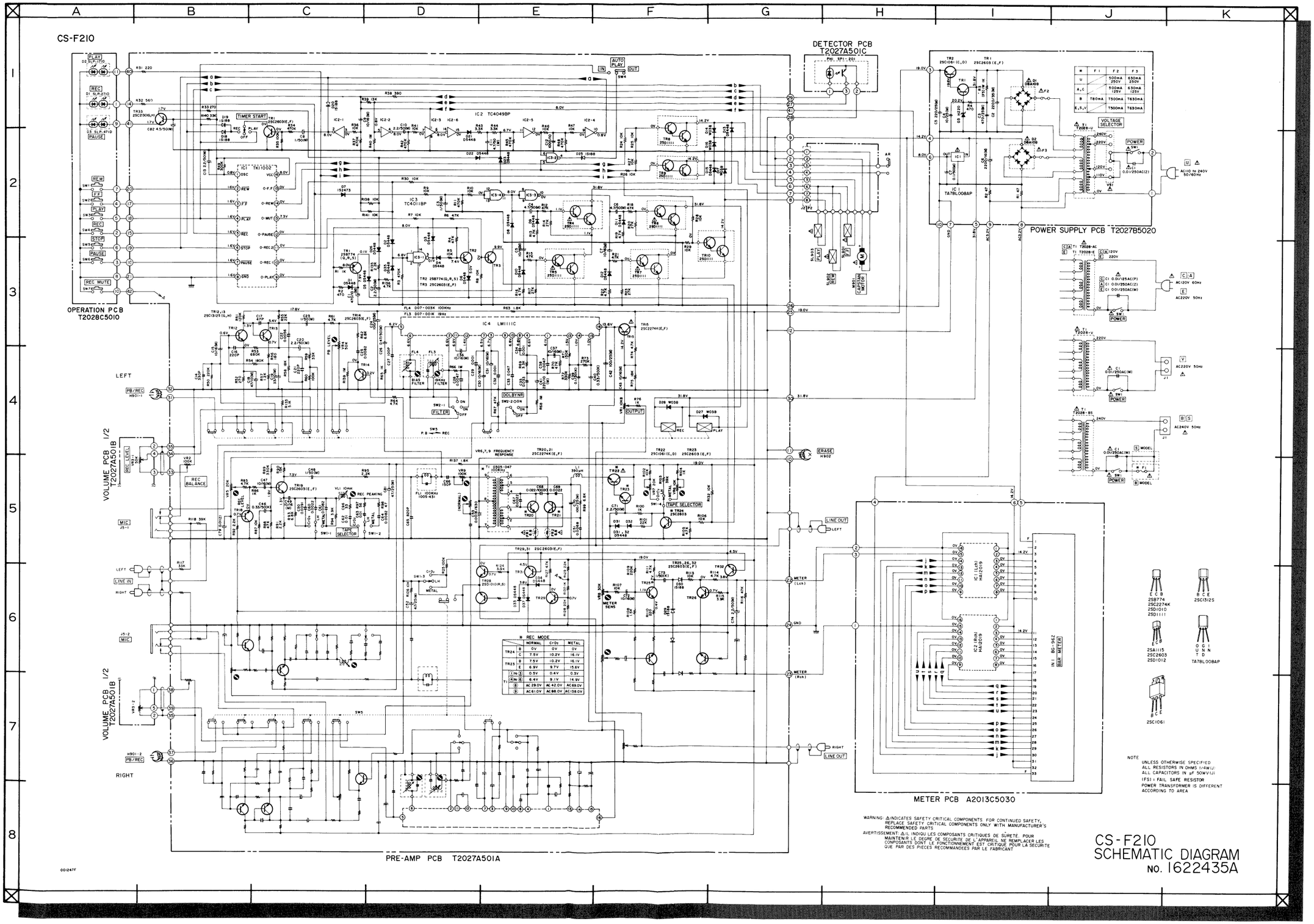


CS-F12 SCHEMATIC DIAGRAM NO. 1622433A

CS-F210J



CS-F210J
SCHEMATIC DIAGRAM
No. 1622434A


CS-F210
DETECTOR PCB T2027A501C
POWER SUPPLY PCB T2027B5020
OPERATION PCB T2028C5010
PRE-AMP PCB T2027A501A
METER PCB A2013C5030
VOLUME PCB T2027A501B I/2
VOLUME PCB T2027A501B I/2
IC1 TK11002
IC2 TC4049BP
IC3 TC4011BP
IC4 LM1111C
TA78L008AP
IC1 (Lch) HA12019
IC2 (Rch) HA12019
IN: BG-962 BAR METER
TAPE SELECTOR
REC BALANCE
REC LEVEL
VOLTAGE SELECTOR
POWER
DOLBY NR
FILTER
OUTPUT
ERASE
LINE OUT
LINE IN
METER (Lch)
METER (Rch)
PB/REC
AUTO PLAY
TIMER START
OPERATION
REC MODE
NORMAL
CrO2
METAL
NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS 1/4W(J)
ALL CAPACITORS IN μF 50WV(J)
(FS) : FAIL SAFE RESISTOR
POWER TRANSFORMER IS DIFFERENT ACCORDING TO AREA
WARNING: ⚠INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS
AVERTISSEMENT: ⚠IL INDIQU LES COMPOSANTS CRITIQUES DE SÛRETÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL NE REMPLACER LES COMPOSANTS DONT LE FONCTIONNEMENT EST CRITIQUE POUR LA SÉCURITÉ QUE PAR DES PIÈCES RECOMMANDÉES PAR LE FABRICANT
CS-F210 SCHEMATIC DIAGRAM NO. 1622435A

CS-F110

OPERATION PCB T2027C5030

VOLUME PCB T2027A501B 1/2

VOLUME PCB T2027A501B 1/2

PRE-AMP PCB T2027A501A

DETECTOR PCB T2027A501C

POWER SUPPLY PCB T2027B5020

METER PCB A2013C5030

※ REC MODE		NORMAL	CrO2	METAL
TR24	B	0V	0V	0V
	C	7.5V	10.2V	16.1V
TR23	B	7.5V	10.2V	16.1V
	E	6.9V	9.7V	15.6V
T1	3	0.5V	0.4V	0.3V
	8	AC29.0V	AC42.0V	AC69.0V
	9	AC61.0V	AC88.0V	AC138.0V

NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS 1/4W ±5%
ALL CAPACITORS IN μF 50WV ±10%
(FS) : FAIL SAFE RESISTOR
POWER TRANSFORMER IS DIFFERENT ACCORDING TO AREA

WARNING: △INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.
AVERTISSEMENT: △ IL INDIQUE LES COMPOSANTS CRITIQUES DE SURETE. POUR MAINTENIR LE DEGRE DE SECURITE DE L'APPAREIL NE REMPLACER LES COMPOSANTS DONT LE FONCTIONNEMENT EST CRITIQUE POUR LA SECURITE QUE PAR DES PIECES RECOMMANDEES PAR LE FABRICANT

CS-F110 SCHEMATIC DIAGRAM NO. 1622432A

00124SF

CS-FI2

OPERATION PCB T2027C5030

DETECTOR PCB T2027A501C

POWER SUPPLY PCB T2027B5020

VOLUME PCB T2027A501B 1/2

VOLUME PCB T2027A501B 1/2

PRE-AMP PCB T2027A501A

METER PCB A2013C5030

* REC MODE		NORMAL	CrO2	METAL
TR24	B	0V	0V	0V
	C	7.5V	10.2V	16.1V
TR23	B	7.5V	10.2V	16.1V
	C	6.9V	9.7V	15.6V
T1	1 IN 3	0.5V	0.4V	0.3V
	4 IN 6	6.4V	9.1V	14.9V
	8	AC 29.0V	AC 42.0V	AC 69.0V
	9	AC 61.0V	AC 88.0V	AC 138.0V

NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS 1/4W ±J
ALL CAPACITORS IN μF 50WV (V)
(FS) = FAIL SAFE RESISTOR
POWER TRANSFORMER IS DIFFERENT ACCORDING TO AREA

WARNING: △ INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.
AVERTISSEMENT: △ IL INDIQUE LES COMPOSANTS CRITIQUES DE SURETE. POUR MAINTENIR LE DEGRE DE SECURITE DE L'APPAREIL NE REMPLACER LES COMPOSANTS DONT LE FONCTIONNEMENT EST CRITIQUE POUR LA SECURITE QUE PAR DES PIECES RECOMMANDEES PAR LE FABRICANT

CS-FI2 SCHEMATIC DIAGRAM NO. 1622433A